

Environmental Checklist State Environmental Policy Act

2006 Facility Master Plan Update Bow Lake Transfer/Recycling Station

August 2006



King County
Department of Natural Resources and Parks
Solid Waste Division

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**This material will be provided in alternate formats
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A. Background

1. Name of the proposed project, if applicable:

Bow Lake Transfer/Recycling Station Expansion Project

2. Name of applicant:

Solid Waste Division, King County Department of Natural Resources and Parks (DNRP)

3. Address and phone number of applicant and contact person:

Kevin Kiernan
Engineering Services Section
Solid Waste Division
King County DNRP
201 South Jackson Street, Suite 701
Seattle, WA 98104-3855
(206) 296-4411

4. Date checklist prepared:

August 22, 2006

5. Agency requesting checklist:

King County Solid Waste Division (KCSWD) is the SEPA lead agency for the project.

6. Proposed timing or schedule (including phasing, if applicable):

Phase 1 construction is anticipated to begin in April 2008 with completion in October 2009. The existing station would continue to be fully operational during Phase 1 construction. Phase 2 construction is anticipated to begin in October 2009 with completion in August 2010. During this phase, residential self-haul customers would be redirected to other county transfer stations at Algona or Renton. Phase 3 construction is anticipated to begin in August 2010 with completion in October 2010. Commercial and self-haul customers will have full access to the station during this phase, which is expected to last 1 to 2 months.

7. Do you have any plans for future additions, expansions or further activity related to or connected with this proposal? ☐ Yes ☒ No *If yes, explain.*

There are no plans for future additions, expansions, or further activity related to or connected with the proposed project.

8. List any environmental information you know about that has been prepared, or will be prepared, directly related to this proposal.

- *Draft Geotechnical Evaluation Report: WSDOT Property, Bow Lake Transfer Station/ Recycling Facility, King County, Washington*, prepared by HWA Geosciences, Inc. for R.W. Beck. 2004.
- *Geotechnical Engineering Study: Bow Lake Transfer Station Improvements Facilities Master Plan, King County, Washington*, prepared by Hong West & Associates, Inc. for R.W. Beck and Associates. 1993.
- *Impacts of I-5/SR 509 Project on the Bow Lake Transfer Station*, prepared by The Transpo Group for King County Solid Waste Division. 2006.
- *King County's Bow Lake Transfer/Recycling Station Upgrade – Noise Assessment Memorandum*, prepared by Geomatrix for Adolfson Associates, Inc. May 5, 2006.
- *King County's Bow Lake Transfer/Recycling Station Upgrade – Air Quality Assessment Memorandum*, prepared by Geomatrix for Adolfson Associates, Inc. May 5, 2006.
- *Local Street Traffic Impact Evaluation for King County Transfer Stations*, prepared by HDR Engineering for King County Solid Waste Division. 2005.
- *Summary of Preliminary Transportation Assessment – Bow Lake Transfer Station*, prepared by The Transpo Group for R.W. Beck. 2004.
- *Supplemental Subsurface Investigation: Bow Lake Transfer Station Improvements Facility Master Plan, King County, Washington*, prepared by Hong West & Associates for R.W. Beck and Associates. 1994.
- *Wetland Reconnaissance for Bow Lake Transfer Station and WSDOT Property*, prepared by Adolfson Associates, Inc. for R.W. Beck. 2004.

9. Do you know whether applications are pending for government approvals of other proposals directly affecting the property covered by your proposal?

☐ Yes ☒ No *If yes, explain.*

No applications or other approvals directly affecting the property are currently pending for government approval.

10. List any government approvals or permits that will be needed for your proposal, if known.

Federal Transit Authority

- NEPA Categorical Exclusion for transfer of WSDOT property to King County Solid Waste Division

Washington State Department of Ecology

- National Pollutant Discharge Elimination System (NPDES) Permit
- Notification of Onsite Hazardous Materials

Washington State Department of Transportation (WSDOT)

- Developer Permit

Puget Sound Clean Air Agency (PSCAA)

- Notice of Construction

King County Industrial Waste Division

- Industrial Waste Discharge Permit

King County Transportation

- Right of Way Use Permit

Seattle and King County Health District

- Solid Waste Transfer Station Operating Permit
- Solid Waste Excavation Approval

City of Tukwila

- Unclassified Use Permit
- Building Permit
- Sensitive Areas Review
- Right of Way Use Permit
- Tree Clearing Permit
- Demolition Permit

City of SeaTac

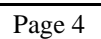
- Right of Way Use Permit

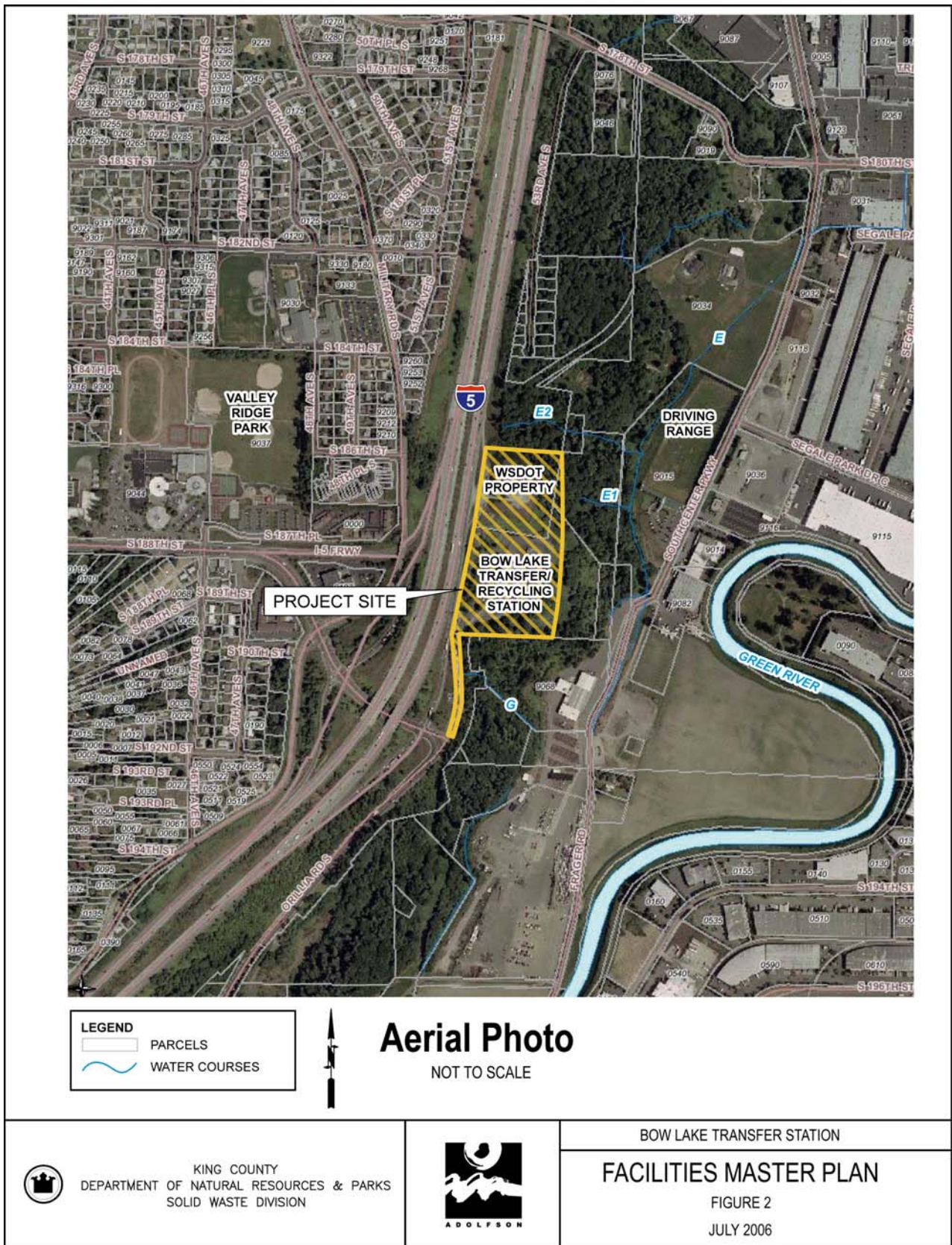
A detailed inventory and summary of permits and approvals that would be required for the proposed project is attached as Appendix A.

- 11. Give brief complete description of your proposal, including the proposed uses and the size of the project and site. There are several questions later in this checklist that ask you to describe certain aspects of your proposal. You do not need to repeat those answers on this page. (Lead agencies may modify this form to include additional specific information on project description.)**

Background

The 2006 update to the *1998 Bow Lake Transfer/Recycling Station Facility Master Plan* (1998 FMP) (KCSWD, 1998) has prepared a blueprint for replacing the existing Bow Lake Transfer/Recycling Station. Proposed improvements will result in improved operational efficiency, compliance with current building and environmental standards, enhanced customer service, upgraded customer and employee safety, and capability for eventual out-of-county waste export. See Figures 1 and 2 for the location of the Bow Lake Transfer/Recycling Station.





The current Bow Lake Transfer/Recycling Station was constructed in 1977 on an 8-acre, closed landfill site (Figure 3). Principal assets of the Bow Lake Transfer/Recycling Station include a 33,100-square-foot, open-sided concrete and steel Transfer Building, a 500-square-foot employee facility located under the Transfer Building roof, a 180-square-foot scale building with two, 50-foot-long pit-type vehicle scales, underground water, sewer, and electrical utility distribution systems, and a network of asphalt paved roads and 8 parking stalls (KCSWD, 1998) (Figures 4 and 5).

Figure 3. Aerial Photograph of Bow Lake Transfer/Recycling Station

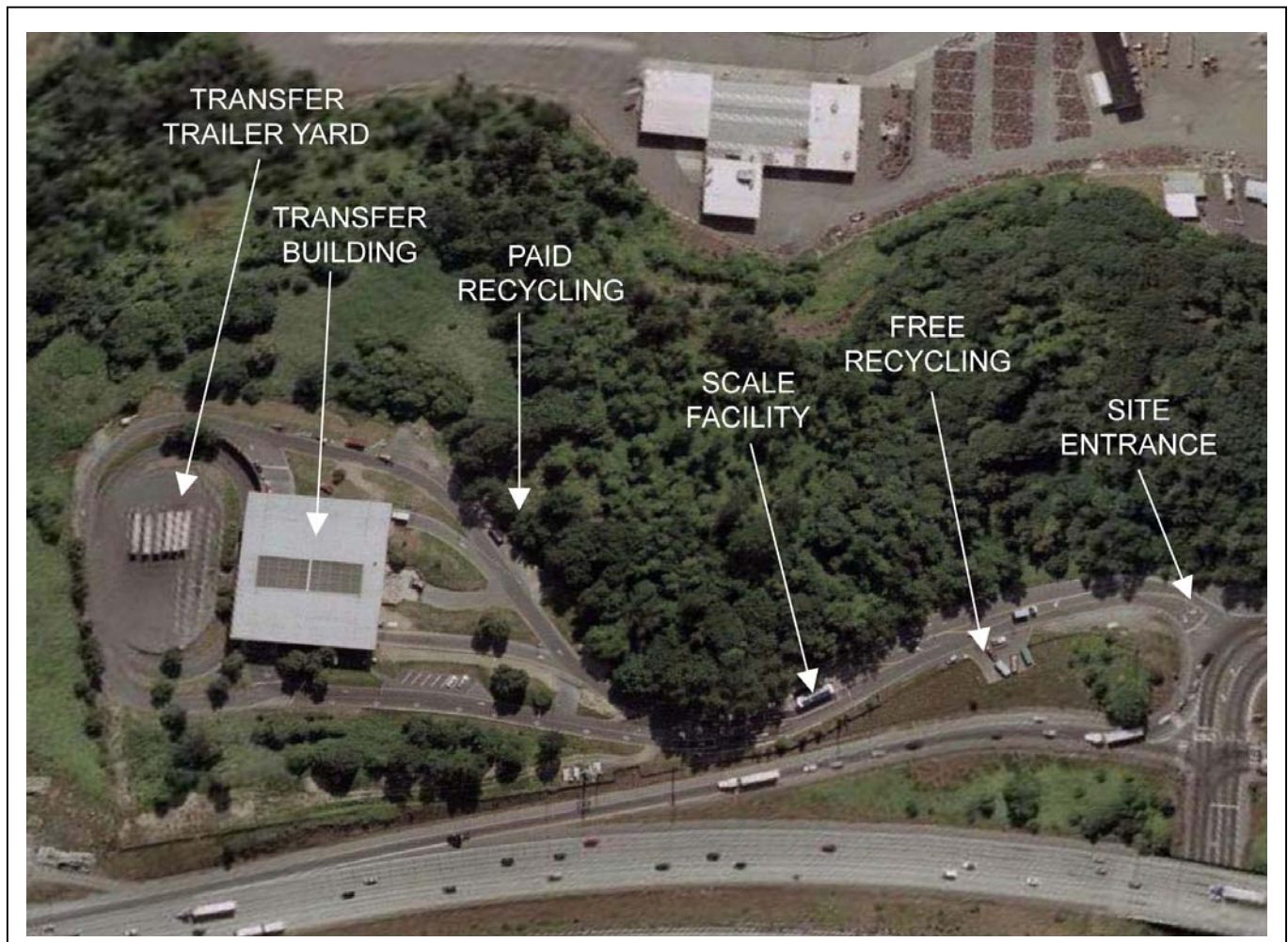


Figure 4. Existing Scale Facility

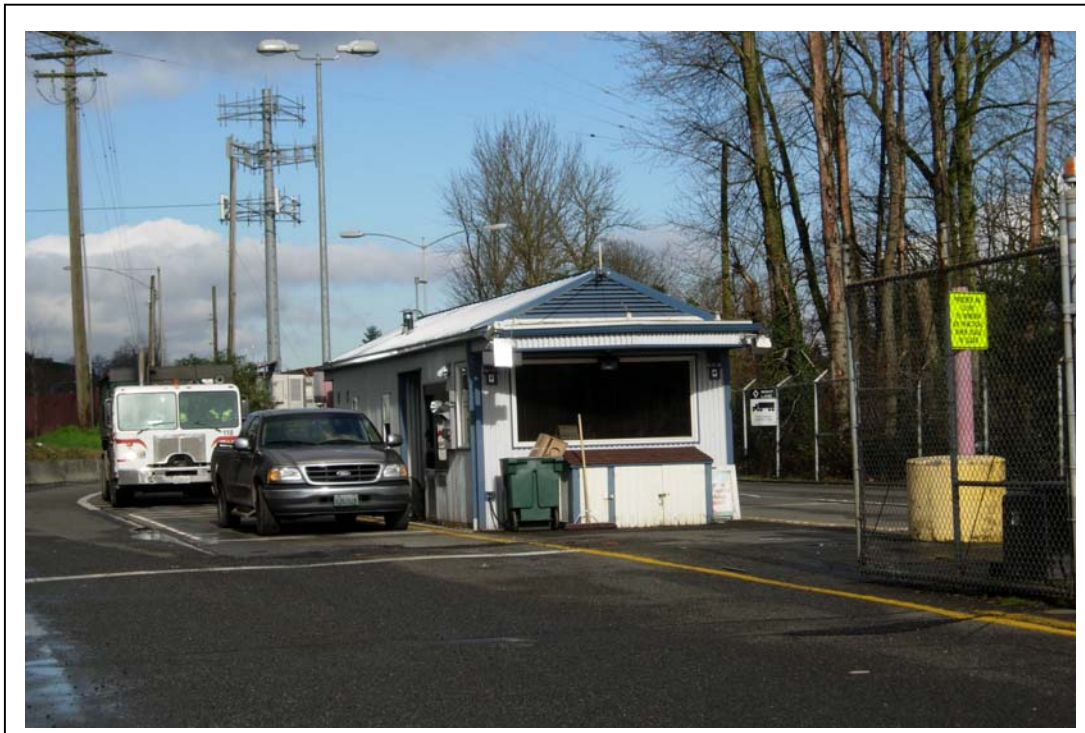


Figure 5. Existing Waste Pit



The Bow Lake Transfer/Recycling Station operates 24 hours per day between 12:00 a.m. Monday through 7:00 a.m. Saturday, and from 8:30 a.m. to 5:30 p.m. on Saturdays and Sundays. It is closed on Thanksgiving, Christmas, and New Years Day. The facility is the busiest transfer station in King County. The station processes average and peak volumes of approximately 800 tons and 1,250 tons per day, respectively (KCSWD, 2006a). The existing station is experiencing several deficiencies that require upgrades including:

- A recycling area that is inadequate in size, location, and accessibility;
- A transfer trailer yard that has insufficient parking and inadequate trailer maneuvering room;
- Scale facility and operations buildings that do not meet statutory requirements for accessibility or King County's standards for size, functionality, security, and employee welfare;
- A receiving waste pit that requires upgrading; and
- A need for a public facilities building and equipment maintenance shelter (KCSWD, 1998).

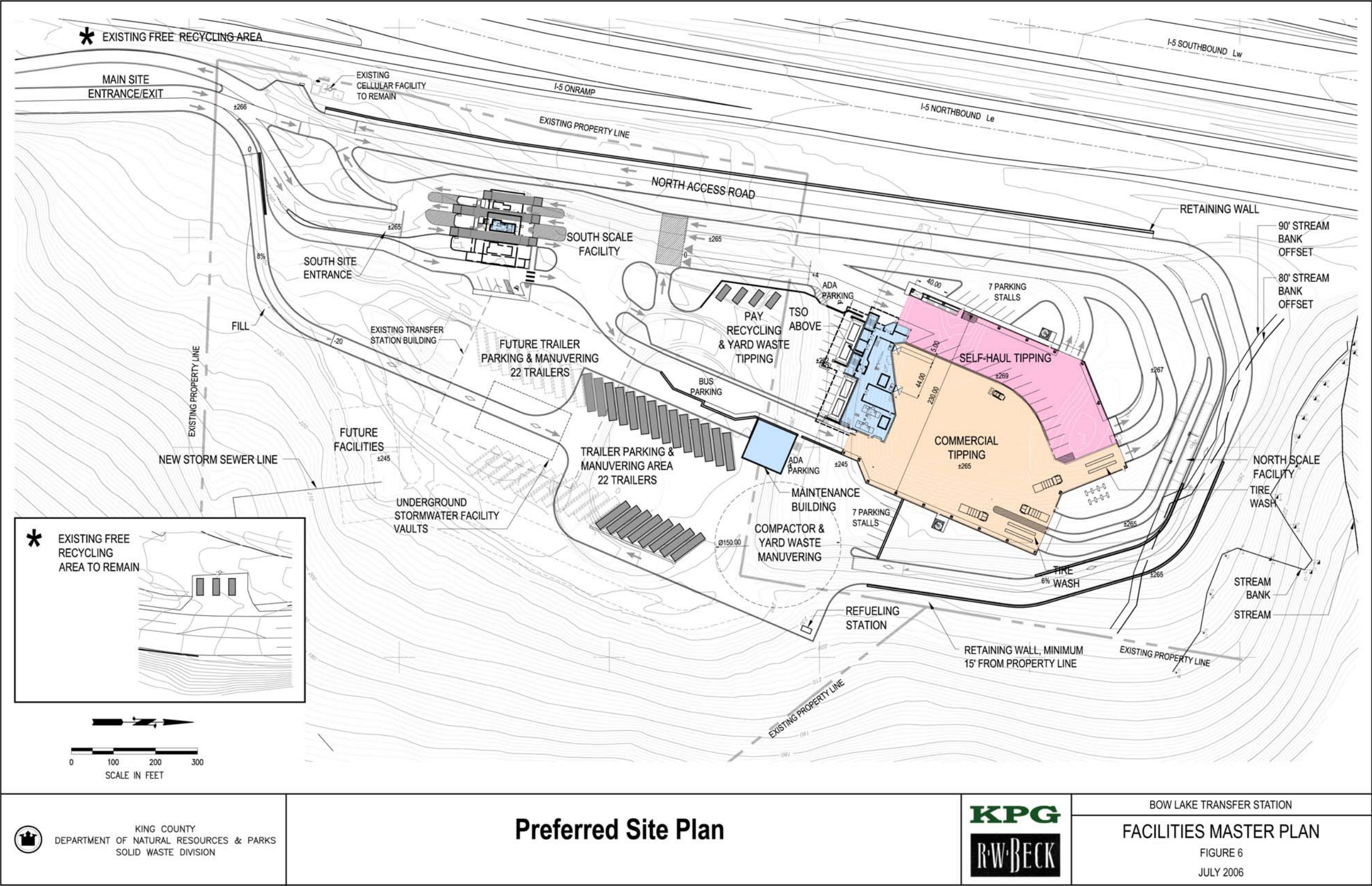
Alternative Discussion

KCSWD has considered over two dozen alternatives for the expansion of the Bow Lake Transfer/Recycling Station. The 1998 FMP focused on making maximum use of existing facilities (KCSWD, 1998). Several alternatives were developed which modified facilities within the existing footprint of the site. These alternatives involved establishing free and pay recycling areas and improving the efficiency of the Transfer Trailer Yard. These alternatives included a perimeter road, and only a small portion of the WSDOT site was to be purchased. Scheme A in Appendix B is a representative example of the alternatives considered at that time.

Following completion of the 1998 FMP, a number of elements were added to the requirements for the Bow Lake site. These included replacement of the existing Transfer Building, a second compactor, and a perimeter service road, among other features. The KCSWD considered additional site plans including Scheme H (see Appendix B). The end result of these evaluations is the 2006 Preferred Site Plan (Figure 6).

Proposed Action

The proposed project would result in a 6.5-acre expansion to the north of the existing site on approximately 8.9 acres currently owned by WSDOT (Figure 2). Property acquisition is needed to accommodate all of the KCSWD's functional requirements of the Bow Lake Transfer/Recycling Station.



When complete, the expanded facility would cover approximately 11.5 acres (503,000 square feet). Approximately 9 acres (402,000 square feet) of the station property would be covered by buildings and associated impervious surfaces. Vegetated areas that would include planters, landscaped islands, and vegetated slopes would cover the remaining 2.5 acres (101,000 square feet). The new facility would accommodate both municipal solid waste (MSW) and yard waste drop-off. Transfer station operator (TSO) activities would be accommodated in a series of rooms located in the southern portion of the new building in approximately the center of the site. Employee parking would be provided to the west (7 stalls) and east (7 stalls) of the Transfer Building and at the South Scale Facility (5 stalls). A transfer trailer maneuvering area would be located to the southeast of the Transfer Building (Figure 6).

Access to the Bow Lake Transfer/Recycling Station is currently provided from South 188th Street and Orillia Road. The proposed project would continue to access the station from this location. With the expanded facility, there would be two scale facilities (Figure 6). Business and residential self-haul customers and oversize commercial vehicles would enter at the South Scale Facility, and commercial customers would enter at the North Scale Facility. Self-haul customer and oversize commercial traffic would pass through the South Scale Facility before proceeding to the self-haul and commercial customer entrances of the Transfer Building, or self-haul customers would proceed to the yard waste and paid recycling area located south of the Transfer Building. General commercial traffic, excluding oversize vehicles, would pass through the unattended North Scale Facility and enter the Transfer Building from the north (Figure 6).

A key element to the success of the proposed expansion of the existing station is the creation of a commercial customer access road parallel to the freeway corridor. The new road would provide the opportunity for multiple site access points for the station. The access road would span 30 feet across, which would accommodate two 12-foot-wide paved lanes with shoulders (Figure 6). Retaining walls would be required in some areas along the west side of the new perimeter road due to the grade separation between the freeway corridor and the service road.

Self-haul customers would exit the facility from the west and north sides of the Transfer Building, returning to the South Scale Facility and main entrance/exit. Commercial customers would exit the Transfer Building at the northeast corner, drive back through the North Scale Facility and pass the South Scale Facility before exiting the site. Transfer trailer traffic would normally be one directional, by entering at the south and exiting to the north (Figure 6).

The new 66,000-square-foot Transfer Building would be located near the center of the site, with a main axis that is generally oriented north-south. The Transfer Building consists of a two-level, cast-in-place concrete substructure and floor system with a pre-engineered, clear span metal building superstructure with concrete panels on the lower wall areas. A large canopy area would extend from the south wall to cover the yard waste drop-off hoppers and customer unloading stalls. The main (upper) floor of the Transfer Building would consist of a stepped concrete floor with a self-haul customer tipping floor located

approximately 4 feet above the commercial tipping/receiving floor, which occupies the largest area of the building (Figure 7). The building includes 16 unloading stalls for residential self-haul customers and up to 6 stalls for commercial customers. The receiving floor would be coated with a hardened corundum aggregate-cementitious topping to extend the life of the floor. Interior illumination would be intensified through the use of large translucent panel areas on walls to provide significant natural light. Skylights may also be installed to increase interior lighting on the main floor.

The lower level of the Transfer Building would include two double-width, back-in tunnels that would house two stationary MSW preload compactors and two top-load chutes for yard waste. An enclosed service room in the lower level would house hydraulic power units (HPU) that would provide power to the two compactors. Dust collection equipment and electrical and mechanical rooms would be located on the floor above the compactor bay.

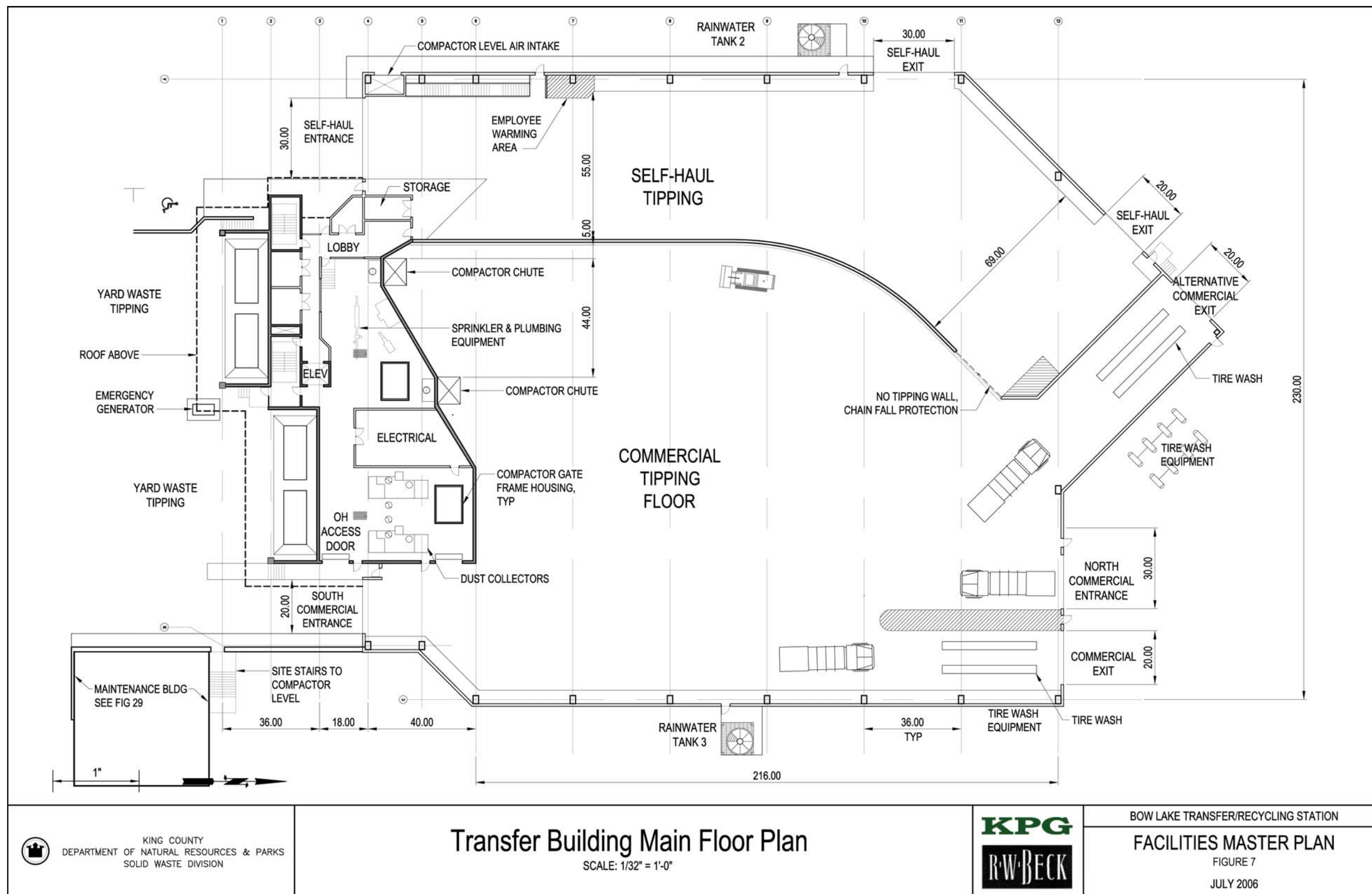
Figure 7 shows the detailed main floor plan. Building elevations are shown on Figures 8 and 9.

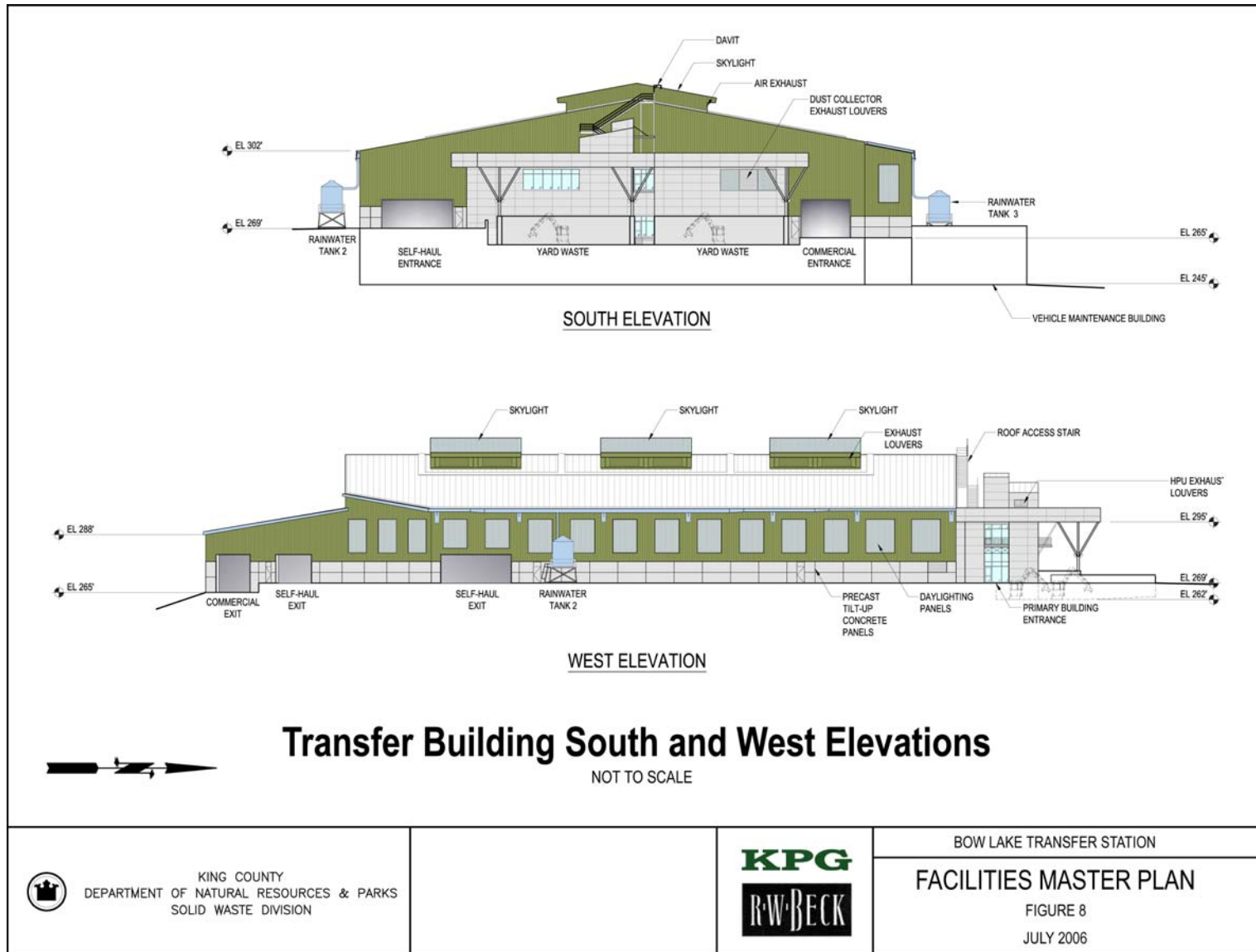
Underground stormwater detention vaults would be located in the southeast part of the site (Figure 6).

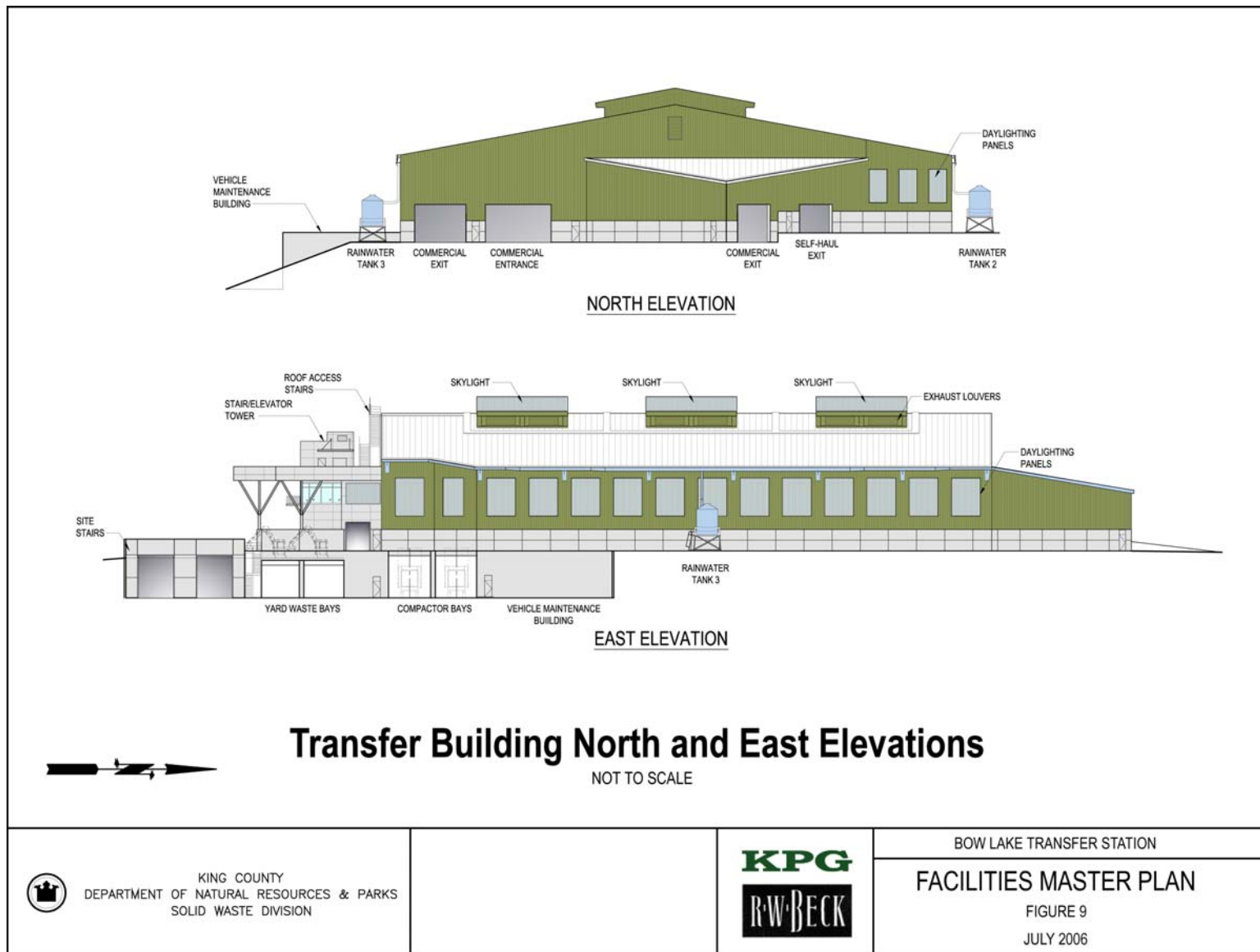
Several other amenities associated with the expanded station would be provided. These are listed below and shown in Figure 6.

- A Refueling Station for KCSWD equipment that would be located north of the Transfer Building;
- TSO areas that include offices, a break room, locker rooms, restrooms, mechanical and storage rooms;
- An approximately 136,000-square-foot paved maneuvering and storage yard for trailers located southeast of the Transfer Building;
- An approximately 17,000-square-foot paved, pay recycling area, which includes a yard waste drop-off with 8 uncovered unloading stalls, located south of the Transfer Building;
- The existing approximately 2,000-square-foot, paved free recycling area located south of the main site entrance/exit; and
- An informational kiosk.

The new station is expected to handle approximately 1,400 tons of MSW in the year 2030 with peak daily volume of 2,500 tons. The station should serve approximately 1,000 vehicles on an average day by the year 2030, and up to 2,100 vehicles on a peak day. Customers would include approximately 26 percent commercial vehicles (trucks), 71 percent self-haul vehicles (pickups and cars) and 3 percent business self-haulers (smaller trucks). By 2030, there are expected to be an average of 46 transfer trailer vehicles per day, with peak days of approximately 82 vehicles. See Appendix C for KCSWD's methodology for forecasting tonnage and vehicles.







Project Schedule

Phase 1. Phase 1 construction would result in the completion of the commercial customer access road, the Transfer Building, the North Scale Facility, and all adjacent roads and site work on the WSDOT parcel to the north of the existing site. A temporary scale house would be placed at the North Scale Facility. Phase 1 would also include construction of the new stormwater detention and treatment vault(s) and sewer line connection to the drainage conveyance system east of the site (Figure 10). During the 18- to 22-month Phase 1 construction period, the station would continue to operate for both commercial and self-haul customers.

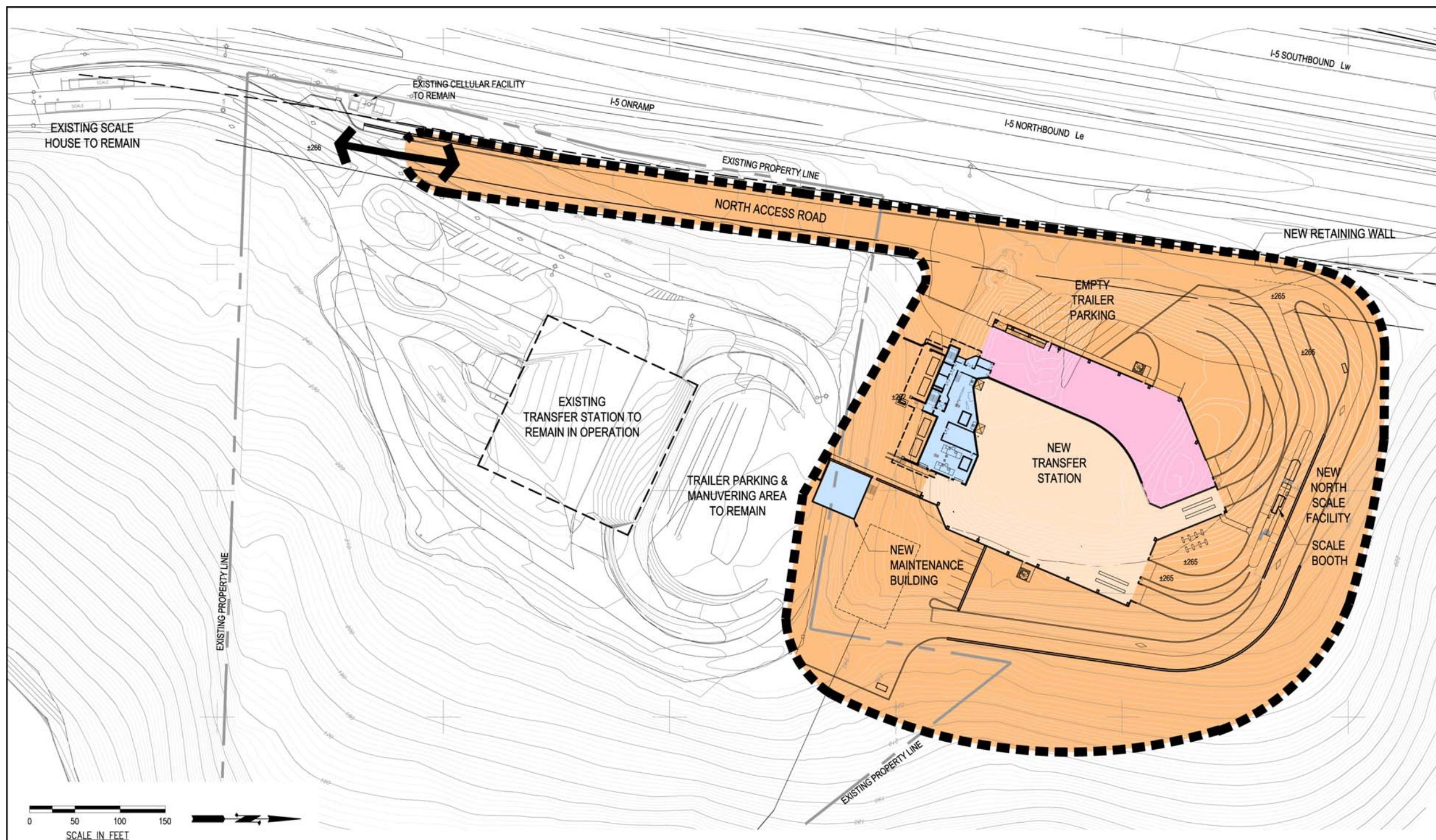
Phase 2. Phase 2 construction would require commercial and business self-haul customer traffic to be redirected to the North Scale Facility and new transfer station during the 10- to 12-month construction period. Residential self-haul customers would not be able to use the facility during Phase 2 construction and would be redirected to other KCSWD stations at Algona and Renton. During Phase 2 construction, the existing scale facility would be demolished and construction of the transfer station would be complete. Some transfer trailers may be parked in the area of the existing trailer yard, and some trailers may have to be parked at other areas of the site or at a temporary yard that could be developed at the north end of the new perimeter service road. The stormwater system would be connected to the permanent off-site transmission line by a temporary line during Phase 2 (Figure 11). Sanitary sewer flow would be collected in a temporary holding tank and transferred to the Cedar Hills Regional Landfill.

Phase 3. Phase 3 construction would result in the completion of the work in the permanent Transfer Trailer Yard and along the return road from the Transfer Building to the South Scale Facility, including the creation of new parking stalls and demolition of the north scale house (Figure 12). Commercial and self-haul customers will have full access to the station during this phase. Phase 3 is anticipated to last approximately 1 to 2 months.

- 12. Location of the proposal. Give sufficient information for a person to understand the precise location of your proposed project, including a street address, if any, and section, township and range, if known. If a proposal would occur over a range of area, provide the range or boundaries of the site or sites. Provide a legal description, site plan, vicinity map and topographic map, if reasonably available. While you should submit any plans required by the agency, you are not required to duplicate maps or detailed plans submitted with any permit applications to this checklist.**

The existing Bow Lake Transfer/Recycling Station is located in south Tukwila near the intersection of Orillia Road and South 188th Street (Figures 1 and 2). The project site is located in Section 35, Township 23 North, Range 4 East.

The legal description of the existing King County property is as follows: 352304 37 BEG W 1/4 COR TH S 87-56-00 E 960 FT TH S 53-24-59 W 727.57 FT TH S 38-42-02 E 1144.63 FT TH S 04-04-00 W 490 FT TH N 87-57-00 W 1238.31 FT TH N 05-44-13 E 1815.11 FT TO BEG TGW THAT POR OF N 490 FT OF SE 1/4 OF SE 1/4 SEC 34-23-4 LY E OF OLD MILITARY RD & OF ORILLIA RD EXTN LESS ST HWY.



KING COUNTY
DEPARTMENT OF NATURAL RESOURCES & PARKS
SOLID WASTE DIVISION

Construction Site Plan Phase 1

Scale 1"=100'

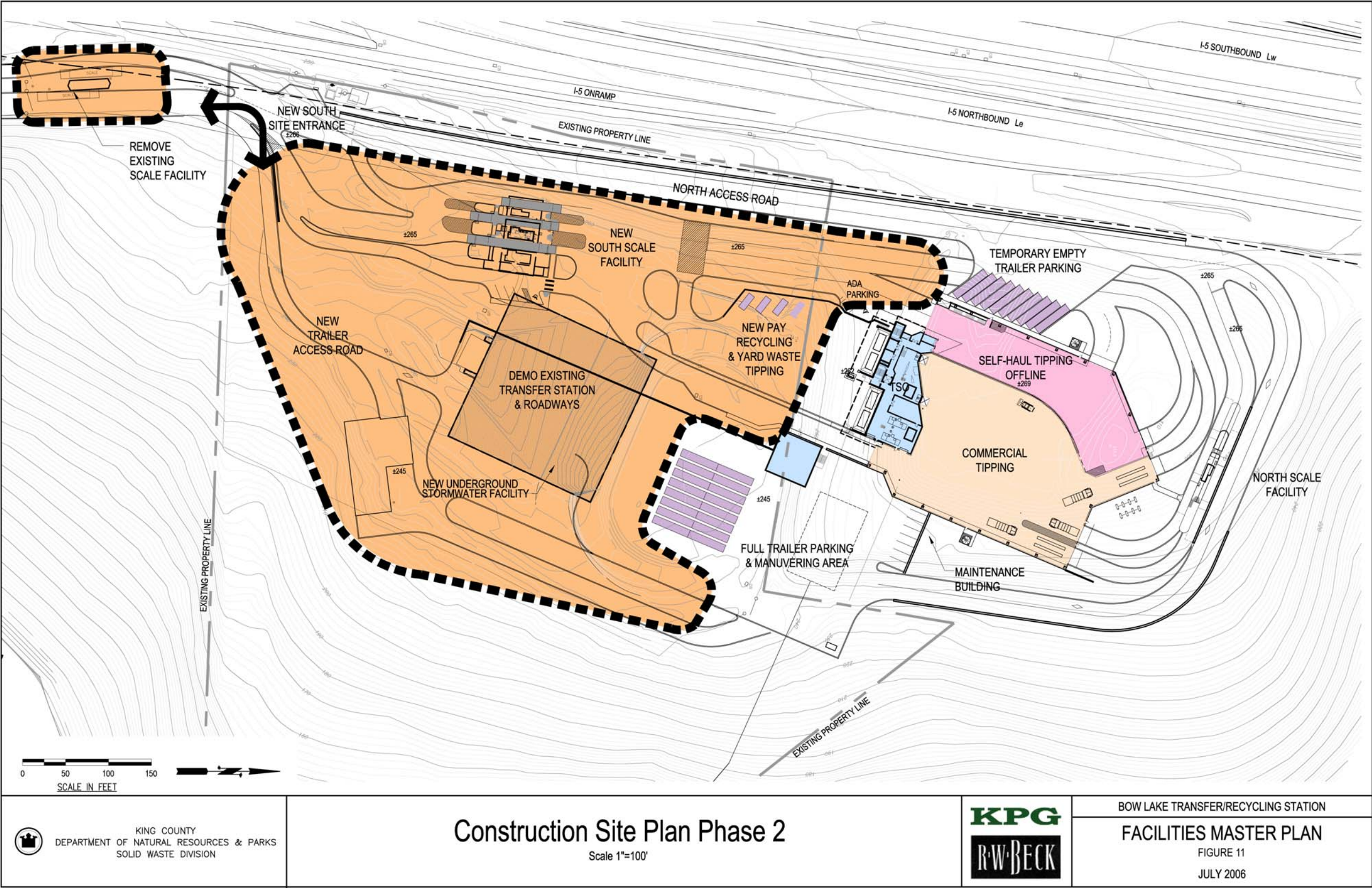


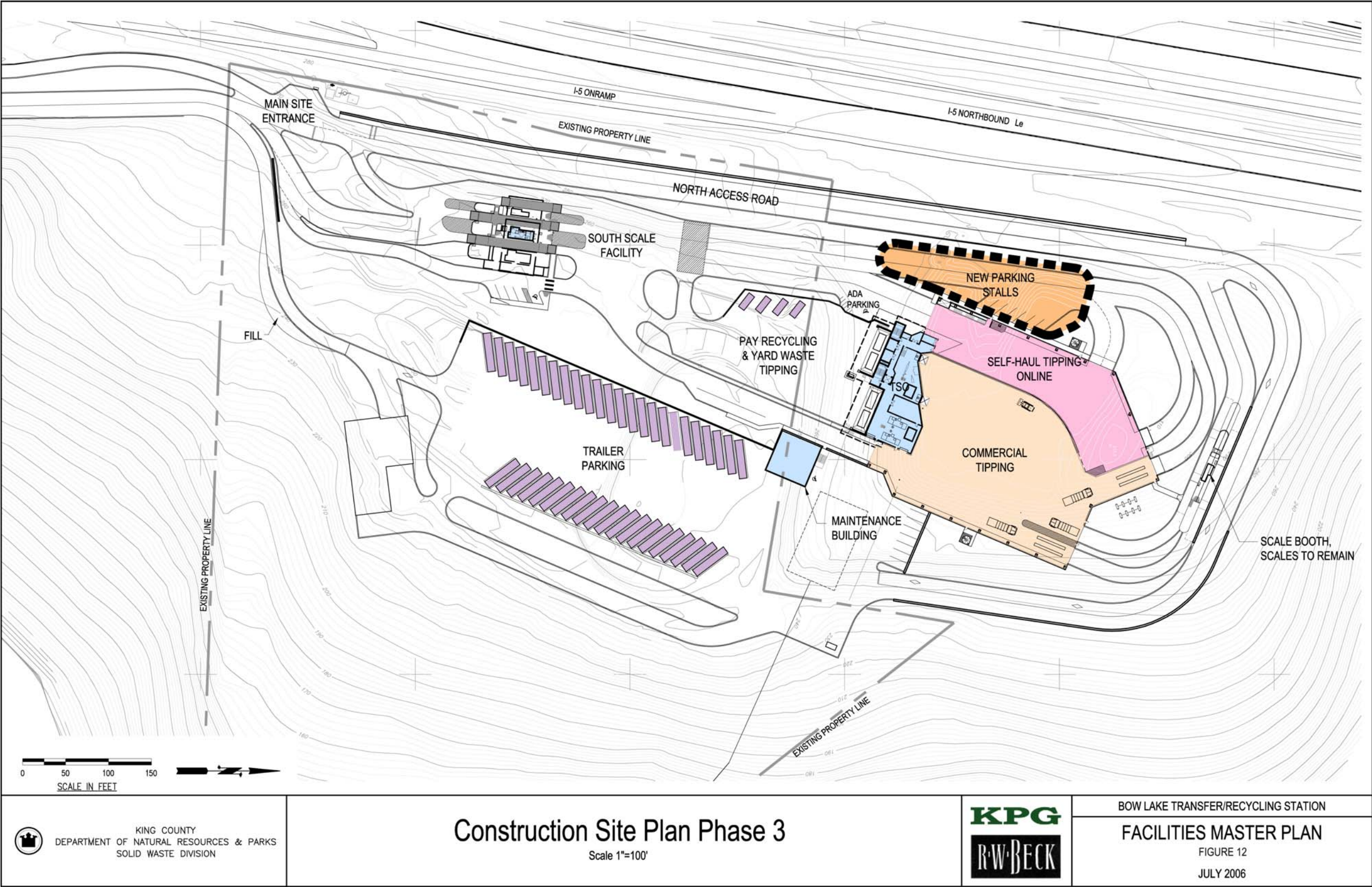
BOW LAKE TRANSFER/RECYCLING STATION

FACILITIES MASTER PLAN

FIGURE 10

JULY 2006





B. Environmental Elements

1. Earth

a. General description of the site (check one)

- ☒ Flat (developed portion of site)
- ☐ Rolling
- ☐ Hilly
- ☒ Steep slopes (to the south and east)
- ☐ Mountainous
- ☐ Other: _____

b. What is the steepest slope on the site (approximate percent of slope)?

The Bow Lake Transfer/Recycling Station site is located at the crest of a long down-gradient slope extending from near I-5 to the Duwamish – Green River Valley and Southcenter Parkway. Elevations at the station site range from about 270 feet above mean sea level (MSL) in the southwest part of the site to about 242 above MSL in the north part. The elevation in the southeast corner of the property is about 80 feet above MSL. Average slope on the east side of the site is about 33 percent or about 3 horizontal: 1 vertical (3H:1V) (KCSWD, 1993). Local areas on the eastern slope exhibit inclinations at or in excess of 1H:1V (KCSWD, 1993).

The WSDOT property north of the station is dominated by a large fill stockpile with dimensions of about 300 feet by 220 feet at the top of the stockpile. The highest elevation is about 314 feet, dropping to about 276 feet on the I-5 side and 230 feet on the eastern side. Side slopes of the stockpile are approximately 60 percent or about 1.7H:1V (KCSWD, 2004a). On the east side of the stockpile, the average slope angle is about 45 percent or about 2.2H:1V (KCSWD, 2004a).

As shown on Figure 3, there is a steep-sided ravine on the north side of the WSDOT property. The ravine is deep and slopes average between 50 and 70 percent as determined by a land surveyor (KCSWD, 2006a).

c. What general types of soil are found on the site (i.e., clay, sand, gravel, peat, muck)? If you know the classification of agricultural soils, specify them and note any prime farmland.

The upland area west of the station site is mantled primarily with Vashon till. This material consists of an unsorted mass of silt, gravel, and sand, typically with high density/strength and low permeability. The surficial geology of the side slope of the river valley, including the station site, consists of kame-terrace deposits. Kame-terrace deposits consist of stratified sand and gravel deposited by meltwater from retreating glaciers. Inclusions of till are common and deposits are frequently mined for sand and gravel (KCSWD, 2004a).

Numerous soil investigations have encountered three general material types on the station site: fill soil, refuse material, and kame terrace deposits (KCSWD, 1993). Fill soil is present at and within a few feet of the surface across most of the developed portions of the

site. This fill is thought to have been deposited as fill cover over the old landfill and new fill placed during the construction of the station. This material consists of loose to medium dense, brown, medium to fine sand, with gravel and silt. Some gravelly sand zones are also present.

Refuse materials are present over most of the developed portions of the site. The refuse deposit thickens from west to east with a maximum depth of approximately 46 feet (KCSWD, 1993). Refuse consists of varying amounts of paper, glass, plastic, metal, asphalt fragments, construction debris, and organic debris.

Glacial deposits are present across the site below the fill and refuse deposits. These glacial deposits, identified as kame terrace deposits, typically consist of medium dense to very dense, gray, medium to fine sand, with varying amounts of silt and gravel. Typically, the upper 5 to 10 feet of the glacial deposits are medium dense to dense, while deeper deposits are dense to very dense.

No agricultural activities are known to have occurred on the site, nor is any prime farmland known to exist on the site.

For additional detail, see Appendix D.

d. Are there surface indications or history of unstable soils in the immediate vicinity?

☒ **Yes** ☐ **No** *If yes, explain.*

The Bow Lake Transfer/Recycling Station site has experienced considerable settlement since the landfill was closed in the late 1950s. Settlement was estimated to be 3.6 feet in the 10-year period between 1966 and 1976, and it was estimated that settlement might be occurring at a maximum rate of 0.24 foot per year (KCSWD, 1993). This settlement was attributed to loose placement of refuse, decomposition of refuse materials, and increased loading on landfill refuse by traffic and structures. Cracks in roadway pavement about the site and settlement of floor slabs have been noted periodically and attributed to landfill settlement (KCSWD, 1993).

The WSDOT property immediately north of the station site consists of recent fill (silty sand and gravel, cobble, boulder, and concrete rubble) overlying older fill with organic refuse material. This older refuse fill was found to overlie native materials. A recent investigation found no evidence of instability, even along slope crests where sloughing frequently occurs in uncompacted fills (KCSWD, 2004a).

North of the WSDOT property, near the head of the ravine, there is a near vertical face 15 to 20 feet in height and 50 to 70 feet in width (KCSWD, 2006a). This near vertical face appears to have been developed in part from erosion caused by discharge from a culvert located near I-5, about 30 feet back from the face (KCSWD, 2006a). Degradation from root wedging and freeze-thaw effects may be a more important factor because of the absence of deep erosion scars and material sloughing away in large slabs (6 to 18 inches thick). The width of the face also indicates degradation rather than erosion (KCSWD, 2006a).

e. Describe the purpose, type and approximate quantities of any filling or grading proposed. Indicate source of fill.

A substantial amount of filling and grading would occur as part of site preparation for the expansion of the Bow Lake Transfer/Recycling Station. Based on past geotechnical studies, it appears that a substantial amount of refuse material from past landfill operations would be encountered during site work for the facility expansion. The most efficient method for handling these materials may be to remove them from the site, at the minimum in areas where construction would occur. An estimated 20,000 cubic yards (CY) of refuse contaminated soils would have to be hauled from the site to Cedar Hills Regional Landfill. An additional 153,000 CY of uncontaminated soils would have to be exported from the site.

Based on recent geotechnical investigations (KCSWD, 2004a), it appears that most if not all of the stored material on the WSDOT property can be used for fill material. Additional material for fill would have to be imported from off-site sources. Preliminary estimates indicate that a total of approximately 40,000 CY of fill material would be needed from on-site stockpile (WSDOT property) and imported (off-site) sources.

In addition, grading would be necessary to achieve desired finish elevations on the site. Site grading is expected to involve approximately 77,000 CY.

f. Could erosion occur as a result of clearing, construction or use? ☒ Yes ☐ No
If so, generally describe.

The extensive site work needed for construction of the expanded Bow Lake Transfer/Recycling Station and the steep slopes on and adjacent to the eastern portion of the site indicate that the potential for erosion during construction is high. Most of the site work would be conducted in Phase 1, expected to take between 18 and 22 months. Phase 1 site work would involve excavation and disposal of remnant refuse materials from the old landfill, and grading and filling of the site with imported material and WSDOT stockpile materials. Avoidance of impacts associated with erosion during construction would be directly dependent on adherence to Best Management Practices (BMPs) intended to control or eliminate erosion during construction. Recognizing the potential for erosion, KCSWD has made erosion control measures an integral part of the construction plan. Construction documents would include detailed specifications regarding the implementation of erosion-related BMPs. These are summarized in Section 1(h) below.

g. About what percent of the site will be covered with impervious surfaces after project construction (i.e., asphalt or buildings)?

There is approximately 213,000 square feet (4.88 acres) of impervious surface area at the existing Bow Lake Transfer/Recycling Station. Impervious surfaces are composed of structures (Transfer Building, scale facility) and paved surfaces used for on-site circulation, the Transfer Trailer Yard, the recycling areas, and parking areas.

The proposed project would result in approximately 402,000 square feet (9.23 acres) of impervious surface. The new Transfer Building accounts for approximately 66,000 square feet (1.52 acre) of this area (Figure 3). The new South Scale Facility and North Scale Facility account for additional impervious surfaces. The remainder consists

primarily of paved surfaces for on-site circulation, the new Transfer Trailer Yard, the new paid recycling and yard waste area, the new Refueling Station, and parking areas.

h. Proposed measures to reduce or control erosion or other impacts to the earth, if any:

- A Temporary Erosion and Sediment Control (TESC) Plan would be developed prior to initiation of construction to reduce soil-related impacts during site work;
- The NPDES Permit issued for construction activities on the site would include BMPs designed to reduce potential impacts related to stormwater and sediments;
- Because of the amount of high fine (silts and clays) content of native materials, most earthwork activity would occur in the dry months of the year;
- Exposed soils and stockpiles would be covered when not in use;
- Silt fences would be installed between construction areas and downstream drainages;
- Check dams would be installed along existing and temporary ditches; and
- Permanent cover would be installed as soon as possible after construction is completed.

2. Air

a. What types of emissions to the air would result from the proposal (i.e., dust, automobile, odors, industrial wood smoke) during construction and when the project is completed? If any, generally describe and give approximate quantities if known?

The proposed project would result in short-term emissions from construction/redevelopment of the existing site and long-term emissions during operation of the upgraded facility. Both types of emissions are addressed below. An air quality report describing impacts is included in Appendix E.

Short-Term Construction Emissions

Construction of the proposed project would result in temporary, localized increases in pollutant emissions from construction activities and equipment. Construction of the project would require the use of heavy equipment, trucks, and smaller equipment such as generators and compressors. These engines would emit air pollutants that would slightly degrade local air quality. Dust from excavation and grading would contribute to ambient concentrations of suspended particulate matter in the project vicinity.

During construction of the facility, existing buildings would be demolished. Demolition contractors would be required to comply with the Environmental Protection Agency (EPA) and the PSCAA regulations concerning the safe removal and disposal of any asbestos-containing materials, if applicable.

Some construction phases would cause odors, particularly during paving operations using tar and asphalt. The construction contractor(s) would be required to comply with the PSCAA regulations requiring the control of odorous emissions so as to prevent undue interference with nearby uses (Regulation I, Section 9.11). Such odors would be short-term and unlikely to affect the nearest residences. In addition, no slash or demolition burning would be permitted in association with this project.

As long as good construction management practices are followed, emissions related to construction would be short-term and relatively minor. As a result, no significant air quality impacts would be expected from construction.

Operational Emissions

Off-Site Traffic Emissions. The proposed project could result in increased vehicle emissions due to an increase in vehicular traffic traveling to and from the expanded Bow Lake Transfer/Recycling Station. However, estimated traffic delays and volumes at the most affected signalized intersections in 2025 are about the same in the future both with and without the facility upgrade, which indicates that the proposed facility expansion is unlikely to affect the operation of the nearest intersections. Consequently, the proposed project is unlikely to significantly impact air quality due to increased vehicular emissions.

On-Site Traffic, Dust, and Odor Emissions. Potential emissions from on-site operations are unlikely to impact air quality because the upgraded facility would be designed to minimize dust and odor emissions. For example, the Transfer Building would be enclosed and incorporate a dust suppression/misting system coupled with a mechanical exhaust ventilation system. The proposed site design would provide more efficient on-site traffic flows to reduce vehicle queuing. Finally, odor impacts at off-site locations are unlikely because of the distance to nearby residences and because the potential to generate odors would be minimized by removing storage trailers on a daily basis. Therefore, no significant air quality impacts are expected due to the proposed facility expansion and upgrade (KCSWD, 2006c).

- b. Are there any off-site sources of emissions or odor that may affect your proposal?** ☐ Yes ☒ No *If so, generally describe.*

The predominant source of air pollution in the project area is traffic on I-5, the surrounding surface streets, and interstate ramps. With recent monitoring trends for carbon monoxide (CO) decreasing (the pollutant emitted from vehicles in the largest quantities), the air quality for CO and other pollutants is generally good, indicating air quality impacts from off-site sources are not likely (KCSWD, 2006c).

- c. Proposed measures to reduce or control emissions or other impacts to air, if any:**

Construction Mitigation

Under PSCAA's Regulation I, Section 9.15, contractor(s) would be required to take all reasonable precautions to avoid or minimize fugitive dust emissions during construction. These precautions and control measures may include:

- Spraying exposed soil with water or other suppressant to reduce emissions of particulate matter;
- Street cleaning and wheel washing of trucks to prevent dirt, mud and other debris deposits on paved roadways open to the public; and
- Limiting the amount of time construction trucks are allowed to idle on-site.

With such control measures in place, the potential for off-site air quality impacts is small.

Operational Mitigation

The following proposed design and operational features would mitigate air quality and odor impacts during operation of the facility:

- The Transfer Building would be fully enclosed except for the entry/exit points, reducing off-site dust and odor impacts;
- The Transfer Building would incorporate a mechanical exhaust ventilation system for dust and odor control;
- There would be a high-pressure, low-volume misting system for dust control in the Transfer Building;
- The hydraulic compactor system with the upgraded facility would eliminate the need to compact the waste in the receiving pit, thereby reducing dust produced by the compacting process;
- The new design would incorporate additional weigh scales and would segregate commercial, business, and self-haulers, thereby reducing vehicle queuing into the facility and reducing vehicular emissions resulting from idling vehicles;
- Wheel-washers would be provided for commercial haulers exiting the facility to reduce the potential to carry dust off-site;
- The haul-out of full storage containers would occur daily, minimizing the extent and length of on-site storage and potential odor impacts related to long-term storage of waste;
- Rear-load containers would be sealed prior to transport to off-site locations; and
- The facility would be thoroughly cleaned on a regular basis, reducing the potential for odor emissions.

With the design features proposed, no operational air quality impacts were identified. Therefore, no additional mitigation is proposed (KCSWD, 2006c).

3. Water

a. **Surface:**

1. **Is there any surface water body on or in the immediate vicinity of the site (including year-round and seasonal streams, salt water, lakes, ponds, wetlands)?** ☒ **Yes** ☐ **No** *If yes, describe type and provide names. If appropriate, state what stream or river it flows into.*

There are no surface water bodies on the existing Bow Lake Transfer/Recycling Station site. However, a stream exists on the WSDOT property to the north. The stream on the WSDOT property is a steep, highly erosive drainage feature and appears to originate in part from I-5 runoff. This stream is referred to as Stream E2 by the downstream property owner, La Pianta LLC (Figure 2). It discharges on the valley floor to Stream E, a drainage feature that discharges to the Green River near river mile (RM) 16.6 and South 180th Street. The discharge of Stream E to the Green River is via a pump station and flow control structure. Stream E2 flows through a mixed deciduous and coniferous forest. It is classified

as a Type 3 stream under the City of Tukwila's watercourse rating system (Whiting, personal communication, 2006) although city maps indicate the stream as Type 2 (City of Tukwila, 2004a). Water quality is believed to be very good (A.C. Kindig & Co., 2004). Stream E2 is not considered fish-bearing because of the steep gradient and lack of suitable habitat (Cedarock Consultants, Inc., 2005).

A second stream, Stream E1, originates in a wetland area located on a property east of the station site. Stream E1 drains east, discharging to Stream E near the driving range facility, where it is directed through existing drainage facilities to the Green River. Similar to Stream E2, Stream E1 flows through mixed deciduous and coniferous forest and is classified as a Type 2 stream under the City of Tukwila's watercourse rating system (City of Tukwila, 2004a). Stream E1 is not considered fish-bearing because of the very steep channel gradient and lack of habitat (Cedarock Consultants, Inc., 2005).

Stream G is located on the adjacent La Pianta property, just east of the existing scale facility. Several wetlands are located along this drainage feature. Stream G drains in a southwest direction, discharging to Stream E and ultimately the Green River. Riparian vegetation consists of a native shrub layer with a dense, moderate-aged mixed deciduous, coniferous forest. Stream G is not thought to be fish-bearing because of its long-term isolation from fish-bearing waters, the steep gradient and lack of suitable habitat (Cedarock Consultants, Inc., 2005).

A wetland reconnaissance performed by Adolfson Associates, Inc. in February 2004 confirmed no wetlands are present on the existing Bow Lake Transfer/Recycling Station site or adjacent WSDOT property. The reconnaissance report is included as Appendix F.

2. **Will the project require any work over, in or adjacent to (within 200 feet) the described waters?** ☒ Yes ☐ No *If yes, please describe and attach available plans.*

Expansion of the Bow Lake Transfer/Recycling Station would require construction within 200 feet of Streams E2, E1, and G. Figure 2 shows the location of the site with respect to off-site streams. As shown in Figure 6, the major features of the expanded station in closest proximity to off-site water bodies are the retaining walls and peripheral paved roadways on the north and northeast margins of the site.

3. **Estimate the amount of fill and dredge material that would be placed or removed from surface water or wetlands and indicate the area of the site that would be affected. Indicate the source of fill material.**

No wetland areas are located on the expanded Bow Lake Transfer/Recycling Station site. Consequently, no fill or dredged material would be placed in or removed from wetland areas.

Depending on the final design of the stormwater system, it is possible that a small amount of fill may be required in Stream E at or near the discharge location.

Fill materials would be placed within the buffer areas for Streams E2 and E1 on the northern and eastern portions of the site. Although the final amount of fill would be determined during final design, it is estimated that the volume of fill material placed within stream buffer areas would be approximately 600 CY. The buffer area that would be covered with fill is expected to be approximately 12,200 square feet (0.28 acres). To offset the impacts to the stream buffer area as proposed, the project will incorporate buffer mitigation, which will include removal of blackberry and other enhancements within the remaining buffer where disturbed. Further, construction within the stream buffers will be limited to the dry season (June 15 through September 15) to minimize the potential for erosion.

4. Will the proposal require surface water withdrawals or diversions?

☐ Yes ☒ No Give general description, purpose and approximate quantities if known.

The proposal would not require any surface water withdrawals or diversions.

5. Does the proposal lie within a 100-year floodplain? ☐ Yes ☒ No

If so, note location on the site plan.

The proposal does not lie within a 100-year floodplain. The nearest floodplain is associated with the Green River on the valley floor, east of the Bow Lake Transfer/Recycling Station site across Southcenter Parkway (Federal Emergency Management Agency, 1995).

6. Does the proposal involve any discharges of waste materials to surface waters? ☐ Yes ☒ No *If no, describe the type of waste and anticipated volume of discharge.*

The proposal does not involve any discharge of waste materials to surface waters. See Section 3(c) Water Runoff, below, and Section 16 Utilities regarding sanitary sewer issues.

b. Ground

1. Will groundwater be withdrawn or will water be discharged to groundwater? ☐ Yes ☒ No *Give general description, purpose and approximate quantities if known.*

Most of the past geotechnical investigations conducted on the Bow Lake Transfer/Recycling Station site have documented perched groundwater zones throughout the fill and refuse material beneath the site (KCSWD, 1993). These vary in size and depth below the surface.

Groundwater was not encountered in borings made on the WSDOT property in October 2003 (KCSWD, 2004a). At that time, five borings were made to depths ranging from 41.5 to 49.5 feet. Standpipe piezometers were installed in two of the borings to determine water table elevations; however, no water was observed shortly after installation.

The proposed expansion does not involve withdrawal of groundwater nor does it include any discharge to groundwater.

2. **Describe waste material that will be discharged into the ground from septic tanks or other sources, if any (i.e., domestic sewage; industrial, containing the following chemicals:... ; agricultural; etc.) Describe the general size of the system, the number of such systems, the number of houses to be served (if applicable), or the number of animals or humans expected to be served by the system or systems.**

No waste materials would be discharged to the ground by operations of the expanded Bow Lake Transfer/Recycling Station. As described below, the proposed stormwater management system would include catch basin and curb inlets and a piped collection system that would convey stormwater runoff to a number of large underground detention vaults. Stormwater from these vaults would be conveyed via a new pipeline to regional stormwater facilities on the valley floor east of the site.

Domestic sewage will be held in storage tanks and subsequently hauled by truck to a municipal system.

Following closure of the landfill in the late 1950s, uncontrolled leachate was reported to be a chronic problem (Seattle – King County Department of Public Health, 1985). As described in Section A(11) Project Description and Section B(1) Earth, a portion of the refuse material remaining from the old landfill would be removed as part of this project. Removal of this refuse should reduce the potential for any release of contaminants into groundwater beneath the site from this source.

c. Water runoff (including stormwater):

1. **Describe the source of runoff (including stormwater) and method of collection and disposal, if any. Include quantities, if known. Where will this water flow? Will this water flow into other waters? If so, describe.**

At the present time, the Bow Lake Transfer/Recycling Station site has approximately 213,000 square feet of impervious surface. Impervious surfaces at the site include the Transfer Building, the scale facility, the Transfer Trailer Yard, several parking areas, and paved roadway surfaces. Most of the runoff generated from the station drains to several storm drains that discharge to the steep slope on the eastern part of the site. The flows from these discharge locations disperses along the top of the slope at the eastern margin of the site where it infiltrates into the heavily vegetated soil cover. There is no detention or treatment of the stormwater from the site. In areas on the site where runoff may come in contact with solid waste operations (e.g., Transfer Trailer Yard, Transfer Building), runoff is conveyed to a holding tank on the east side of the site. This water is pumped to a tanker truck and hauled to the Cedar Hills Regional Landfill leachate ponds.

Stormwater leaving the site drains to the valley floor through natural drainage channels (see description of Streams E1 and E2, above). These drainages discharge into an existing ditch and culvert system along Southcenter Parkway that flows to the north. For purposes of storm drainage, this area is known as the

North Basin. Flow is conveyed to Southwest 43rd Street and is eventually discharged to the Green River at the P17 pump station. Based on conversations with the City of Tukwila, there are no known drainage problems downstream of the Bow Lake Transfer/Recycling Station.

As part of a larger plan to develop properties south and east of the station, a private developer has proposed improvements to Southcenter Parkway. Although no plans are yet approved, it is possible that the development and Southcenter Parkway improvements may move forward in the next few years. These changes may involve converting the ditch and culvert system to a piped system. KCSWD has initiated discussions with the City of Tukwila regarding improvements to Southcenter Parkway and the possibility of including storm drainage from the station in the new system.

Regulatory Requirements. The City of Tukwila has adopted the *King County Surface Water Design Manual* (King County, 1998) (King County Manual) as amended by the Tukwila Public Works Development Guidelines and Design and Construction Standards (Tukwila Municipal Code [TMC] 14.30.070). The City of Tukwila is likely to adopt the 2005 King County Manual prior to submittal of permit applications for the expansion of the Bow Lake Transfer/Recycling Station. For this reason, design of stormwater facilities would follow the 2005 King County Manual.

Expansion of the station would create more than 2,000 square feet of new impervious surface and would therefore require a Full Drainage Review. Under Full Drainage Review, the project is required to meet all eight of the Core Requirements described in the King County Manual. These include:

1. Discharging surface water at the natural location;
2. Providing an off-site analysis;
3. Providing flow control;
4. Providing a conveyance system;
5. Providing erosion and sediment control measures;
6. Maintaining and operating the surface water facilities;
7. Complying with financial guarantees; and
8. Providing water quality treatment.

In addition to Core Requirements, the project would have to meet Special Requirement 4, Source Controls. Water quality controls would be required to prevent runoff from coming into contact with solid waste-related pollutants, thereby reducing the potential for introduction of contaminants into public waterways. Compliance with Core and Special Requirements would be developed in a Technical Information Report (TIR), which would include drainage design as well as the proposed Erosion and Sediment Control (ESC) Plan.

An NPDES Permit would likely be required for construction activities such as clearing, excavation of refuse material from the old landfill, filling, and grading. This permit would probably require preparation of a Stormwater Pollution Prevention Plan (SWPPP).

The Green River Flood Control Zone District is a quasi-municipal corporation established by the State of Washington with responsibility for maintaining and operating flood control facilities on the lower Green River. Discharges to the Green River in the cities of Auburn, Kent, Renton, and Tukwila and in King County are regulated by the *Green River Pump Operations Procedures Plan*. This plan provides guidelines for the design and operation of pumped and gravity outfalls to the river. Flood protection measures include limiting pump station operation hours and providing storage for the 100-year, 7-day rainfall event. Because stormwater from the station would be conveyed to an existing pump station, the requirements of the plan do not apply.

Proposed Stormwater Facilities. The runoff from the expanded Bow Lake Transfer/Recycling Station was modeled using the KCRTS model. The results, shown in Table 1, indicate post-construction impervious surfaces and peak flows for 2-, 10-, 25-, and 100-year events. Note that runoff from approximately 0.45 acres would be collected and diverted to the sanitary sewer.

Table 1. Hydrologic Results – Developed Conditions

Impervious Area (acres)	8.78
Till Grass Area (acres)	2.32
Diverted to Sanitary Sewer (acres)	0.45
Total (acres)	11.54
Peak Flow (cfs)	
2-year	4.38
10-year	7.48
25-year	9.72
100-year	14.13

Source: 2006 Facility Master Plan Update (KCSWD, 2006a).

The on-site collection and conveyance systems for the expanded Bow Lake Transfer/Recycling Station are discussed in Appendix G. Drainage from building roofs and paved surfaces on the site would be collected and conveyed to underground detention vault(s) in the southeast portion of the site. An underground detention vault was selected rather than an infiltration facility or open pond because of unsuitable soils and lack of available space on the site. Preliminary modeling indicates that a vault 18 feet by 50 feet by 11 feet in size will be sufficient to meet applicable requirements of the King County Manual.

Detained flows would then be directed to a water quality treatment system, which meets the applicable basic water quality treatment requirement. A StormFilter system consisting of media-filled cartridges would be used. Depending on the type of pollutant to be treated, an array of media can be selected. In this application, the StormFilter cartridges would contain media designed to remove sediment.

Areas on the expanded station site with higher potential for contaminants would be provided with additional water quality treatment measures. As part of source control, drainage from the Transfer Trailer Yard and the paid recycling area

would be isolated with the capability of directing flows to either the storm drainage system or to the sanitary sewer system. Although not required by the King County Manual, the Transfer Trailer Yard, the North and South Scale Facilities, and queuing areas would be drained to an oil/water separator for additional treatment prior to release to the site drainage system.

Following treatment, stormwater would be discharged down the slope to the valley floor through a tight-lined 24-inch pipe. Treated stormwater would then be discharged to Stream E along Southcenter Parkway. The pipeline from the expanded station down the slope to the valley floor would require an easement(s) from property owner(s) along the proposed pipeline corridor.

Alternatively, detained flows released from the stormwater vault would be conveyed to a flow spreader that would discharge flows on county property at the top of the slope on the eastern side of the site. The flow spreader would likely be a trench or similar structure designed to disperse flow and prevent high flow point discharges. Dispersion would be necessary to reduce the risk of erosion on the slope. Overall, the risk of erosion, particularly during high precipitation periods, makes this option less desirable than conveyance downslope in a pipeline.

2. Could waste materials enter ground or surface waters? ☐ Yes ☒ No

If so, generally describe.

Given the controls and treatment described above, it is unlikely that waste materials could enter ground or surface waters.

d. Proposed measures to reduce or control surface, ground and runoff water impacts, if any:

- A TESC Plan would be developed prior to initiation of construction to reduce soil-related impacts during site work;
- The NPDES Permit issued for construction activities on the site would include BMPs designed to reduce potential impacts related to stormwater and sediments;
- A SWPPP would be developed in order to minimize the introduction of pollutants into local watercourses during construction;
- During construction, runoff would be directed to temporary sediment traps or portable treatment tanks for treatment prior to discharge to downstream systems;
- During construction, petroleum products, solvents, etc. would be stored in a dedicated location designed to contain potential spills;
- Wheel-washing facility and track-off grates would be provided for commercial customers to prevent tracking waste to off-site roadways;
- The full container area would be drained to the sanitary sewer system with capability for diverting to the stormwater system;
- The empty container area would be drained to the stormwater system with capability for diverting to the sanitary sewer system; and
- Drainage from open-top drop boxes at the self-haul recycling area would be drained to the sanitary sewer system.

4. Plants

a. Check or circle types of vegetation found on the site:

- ☒ Deciduous tree: alder, maple, aspen, other: cottonwood
- ☒ Evergreen tree: fir, cedar, pine, other
- ☒ Shrubs: blackberry, salmonberry, Indian plum, Scot's broom
- ☒ Grass
- ☐ Pasture
- ☐ Crop or grain
- ☐ Wet soil plants: cattail, buttercup, bullrush, skunk cabbage, other
- ☐ Water plants: water lily, eelgrass, milfoil, other
- ☐ Other _____

b. What kind and amount of vegetation will be removed or altered?

The proposed project would require the removal of approximately 189,000 square feet (4.34 acres) of existing vegetation. Most vegetation removal would occur north of the existing Bow Lake Transfer/Recycling Station, on the WSDOT property. A significant amount of grading would be required on the vacant portion of the WSDOT property, which is primarily covered with grass and Scot's broom. Additional vegetation removal would be required along heavily vegetated and forested slopes within the WSDOT property. Tree removal in these areas is anticipated.

c. List threatened or endangered species known to be on or near the site.

A review of 2006 Washington Department of Natural Resources (WDNR) National Heritage Program (NHP) data revealed no presence of rare or threatened plant species within the project area or nearby vicinity.

d. Proposed landscaping, use of native plants or other measures to preserve or enhance vegetation on the site, if any:

The proposed project would result in a net loss of vegetation at the project site, specifically relating to existing invasive vegetation that would be removed from the WSDOT property. Retaining walls have been used wherever feasible to reduce the fill footprint of the project and minimize impacts to existing natural forested areas. The final landscape plan would include several vegetated areas throughout the site, including landscaped planters, medians, and existing native vegetated areas on the WSDOT property that would be preserved during the design phase of the project.

5. Animals

a. Check or circle any birds and animals which have been observed on or near the site:

- ☒ Birds: hawk, heron, eagle, songbirds, other
- ☐ Mammals: deer (scat), bear, elk, beaver, other
- ☒ Fish: bass, salmon, trout, herring, shellfish, other

b. List any threatened or endangered species known to be on or near the site.

According to the 2006 Washington State Department of Fish and Wildlife (WDFW) Priority Habitats and Species (PHS) database, no threatened or endangered species are known to be on the project site. However, the WDFW database documents the presence of a bald eagle nest located approximately 0.5 mile west of the site, near the north end of Angle Lake. Bald eagles are currently designated as threatened on both state and federal species lists. The nest was documented in 1999 but was not active during WDFW surveys conducted in 2001 (City of Tukwila, 2005). Even if the bald eagle nest is still active, the project site is separated from the nest by I-5, which would negate any potential noise impacts during construction or operation of the Bow Lake Transfer/Recycling Station.

The Green River, located directly east of the project site (Figure 2), provides habitat to numerous fish species including salmon (fall Chinook, coho, chum, sockeye), steelhead, and various other species (WDFW, 2006). Chinook salmon are currently listed as a threatened species according to state and federal species lists. No fish are documented or have been observed in Streams E, E1 or E2 (WDFW, 2006; Raedeke Associates, Inc., 2005).

c. Is the site part of a migration route? ☐ Yes ☒ No *If so, explain.*

The project site is not part of a migration route. However, Washington State is located within the Pacific Flyway, which is a flight corridor for migrating waterfowl and other avian fauna. The Pacific Flyway extends south from Alaska to Mexico and South America. No part of this site is used as part of the flyway however, due to lack of suitable habitat.

d. Proposed measures to preserve or enhance wildlife, if any:

A loss of a portion of native forest associated with the slopes on the WSDOT property would reduce the amount of potential habitat available in the near vicinity of the site for wildlife species. As previously discussed, the proposed project is not anticipated to directly affect any listed wildlife species. Measures that would be incorporated during construction to ensure minimal impact to the surrounding areas, including potential wildlife habitat, would include use of BMPs including sediment fencing, erosion protection measures, stormwater controls, and practices to minimize impacts to air quality.

Measures to ensure minimal impacts to nearby sensitive areas, including the Green River, would be incorporated into the final design of the new facility. Effective water quality controls, including stormwater detention, would ensure runoff impacts are minimized downslope from the facility.

6. Energy and Natural Resources

a. What kinds of energy (electric, natural gas, oil, wood stove, solar) will be used to meet the completed project's energy needs? Describe whether it will be used for heating, manufacturing, etc.

The completed project would require energy in the form of electricity and diesel fuel. There would be no natural gas usage at the expanded Bow Lake Transfer/Recycling

Station. Electricity demand is estimated at 114,000 kilowatt hours (kWh) per year. The project also incorporates installation of a photovoltaic solar array on the roof of the Transfer Building. This is expected to generate approximately 11,000 kWh per year, which would be sold to the electrical power grid.

Similar to other KCSWD facilities, biodiesel fuel would be required to power on-site equipment (e.g., front end loader and yard tractor) (Long, personal communication, 2006). These vehicles would require an estimated 21,700 gallons per year. This figure does not include fuel requirements of the transfer trucks which haul compacted waste from the station since these are not included in the proposed project.

- b. Would your project affect the potential use of solar energy by adjacent properties?** ☐ Yes ☒ No *If so, generally describe.*

The Bow Lake Transfer/Recycling Station expansion project would not affect any potential use of solar energy by adjacent properties.

- c. What kinds of energy conservation features are included in the plans of this proposal? List other proposed measures to reduce or control energy impacts, if any:**

A number of measures have been incorporated into the design of the expanded station which would reduce energy usage.

- The Transfer Building would be oriented in a manner that captures prevailing winds for cross-ventilation, thereby reducing the need for mechanical ventilation.
- Energy-efficient fans in the Transfer Building would be designed to operate in conjunction with natural ventilation.
- Translucent panels would be installed in the roof and sides of the Transfer Building in order to reduce the need for artificial lighting.
- The high bay lights in the tipping floor area would have daylight sensors to eliminate use of the lights during periods when natural light is sufficient.
- Smaller buildings at the expanded station would include efficient lighting, energy-efficient HVAC systems, and operable windows designed to enhance energy efficiency.
- The project design would incorporate sustainable design principles that would be measured through the Leadership in Energy and Environmental Design (LEED™) rating system.

7. Environmental Health

- a. Are there any environmental health hazards, including exposure to toxic chemicals, risk of fire and explosion, spill or hazardous waste that could occur as a result of this proposal?** ☒ Yes ☐ No *If so, describe.*

There is potential for construction-related accidents and spills to occur during the construction period (up to 36 months). Accidents could be associated with the use of heavy equipment, tree removal, and steep slopes. Minor spills of solvents, lubricants, paint, and fuels could occur over the course of construction. The potential for accidents and/or spills is typical of construction projects. In addition, excavation of

refuse materials remaining from the old landfill may generate odors, minor spills, etc. Assuming that the contractors adhere to standard construction practices, the potential for accidents and inadvertent spills is low.

The renovated Bow Lake Transfer/Recycling Station could potentially subject surrounding areas to environmental health hazards, which is a typical concern of all solid waste handling facilities. Some potential exists for small volumes of diesel, oil, antifreeze, hydraulic fluid or gasoline to spill from operating equipment as a result of accident or malfunction at both the existing Bow Lake Transfer/Recycling Station and the renovated facility, though this level of risk is small and is not expected to change as a result of the proposed project. Although the Bow Lake Transfer/Recycling Station does not accept hazardous, dangerous, or PCB-containing wastes or other types of wastes that could be considered hazardous, incidental quantities of hazardous household waste may also be introduced to the solid waste stream at the facility.

As with the existing facility, the new Bow Lake Transfer/Recycling Station may attract birds, rodents, and flies. There is potential for these animals and insects to carry diseases. The potential for impacts of this type is reduced at the Bow Lake Transfer/Recycling Station because of the lack of residences in close proximity to the facility. Further, elements of the design of the new facility are intended to reduce the attraction for animals and insects typically drawn to solid waste facilities. See Section 7(a)(2) below.

1. Describe special emergency services that might be required.

No special emergency services are required at the existing Bow Lake Transfer/Recycling Station, nor would they be required for the proposed expansion of the facility. The station currently relies on emergency services that are generally available in the City of Tukwila and south King County. For example, in the case of a potential spill, worker contact with hazardous or toxic substances may require emergency response by paramedics or cleanup by a hazardous materials response team. In the case of a fire, the local fire department would be relied upon for response. Accidents or injuries may require response from local fire, police, and/or ambulances. Overall, the potential need for emergency services is not expected to be any greater than currently exists. Further, the design of the new facility incorporates safety features that reduce the potential for accidents.

2. Proposed measures to reduce or control environmental health hazards, if any.

Health and Safety Plan. Contractors will be required to prepare a Health and Safety Plan to be implemented during construction periods. This would include measures to be incorporated into the work plan to avoid on-site accidents, and as well, measures intended to provide rapid response in case of accidents that may occur on the site.

Waste Screening. The Bow Lake Transfer/Recycling Station does not accept toxic chemicals or other wastes that are considered hazardous to environmental health. In accordance with established operating procedures, KCSWD would conduct a proactive program for screening toxic materials and other hazardous

materials from the waste stream (Badger, personal communication, 2006). Signage would be provided at the scale houses describing the types of waste that are not allowed at the station and indicating alternative locations where toxic and/or hazardous wastes may be taken for disposal.

Scale house operators would conduct visual screening of waste loads. If toxic or hazardous wastes are observed, customers are informed of locations where these materials can be taken. Station operators on the tipping floor would conduct similar screening, with the intention of intercepting toxic or hazardous wastes prior to disposal by customers. In addition, full-time waste screeners would visit the station periodically to observe the solid waste stream and determine whether any toxic or hazardous materials are present.

Emergency Response. KCSWD retains an emergency response contractor on a 24-hour-per-day, 7-day-per-week basis for all of its solid waste facilities (Long, personal communication, 2006). This contractor would respond to spills or accidental discharges of petroleum products and hazardous wastes at the existing Bow Lake Transfer/Recycling Station, if they were to occur. This emergency response capability would continue to remain in place with the expanded facility. In the event of a minor spill, absorbent pads and other absorbent materials would be stored in convenient locations for use by employees. Impervious areas where spills could occur would be graded in a manner that any flows would be directed to an oil/water separator. These measures are intended to control potential emergency spills and prevent any discharge to drainages or adjacent vegetated areas. In addition, employees would be trained in emergency response procedures, including emergency contacts, as part of implementation of the Spill Prevention, Control, and Countermeasure (SPCC) Plan.

Storm Drainage. The on-site stormwater collection system would be designed to direct stormwater from impervious surfaces to detention vault(s) and subsequently to on-site stormwater treatment facilities. On-site treatment facilities would be designed for oil/water separation and/or sediment removal. In the unlikely event of an emergency spill, these facilities would facilitate control and removal of contaminants. See Section 3(c) Water Runoff for additional details on proposed stormwater collection and treatment systems.

Air Quality. A number of environmental air quality measures would be incorporated into the design of the project, including permanent air quality monitors in most occupied spaces that would monitor for carbon monoxide and sulfur dioxide, which are products of gas and diesel internal combustion engines, respectively. Air quality monitors would also measure chlorine, which sometimes is released when a container such as a bleach container discarded in the waste is broken. There would be several dust and odor neutralization systems to control air quality inside the new Transfer Building. There would be audible and visual warning systems actuated by the air quality monitors to alert staff and customers in the event air quality degrades below a preset threshold level.

Safety and First Aid. A number of protective measures (e.g., curbs, rails, signage) would be incorporated into the design of the tipping area for both staff and customers to minimize accidental falls in the Transfer Building. Road and

building size and layout would promote accident-free movement on the site. Emergency eyewash and shower units would be located at various locations where there is any possibility of a person being splashed with an unknown liquid.

Inspections. The Bow Lake Transfer/Recycling Station would continue to operate under regulations imposed by the Seattle-King County Department of Public Health (Health Department), the primary regulatory and enforcement agency for solid waste handling facilities in King County (RCW 70.95). The Health Department regularly inspects solid waste handling sites.

Nuisance Animals and Insects. In order to control birds, rats, and other rodents, the solid waste facility would continue to incorporate a number of deterrent measures including use of closed, end-loaded containers, regular housekeeping of the grounds, and use of traps as needed.

Operating Plan. The Bow Lake Transfer/Recycling Station would submit an updated Operating Plan, which would include detailed descriptions of measures intended to address potential environmental hazards in accordance with Health Department requirements.

b. Noise

1. What types of noise exist in the area which may affect your project (i.e., traffic, equipment, operation, other)?

The existing sound levels in the project vicinity are dominated by noise from traffic traveling on I-5. These sound levels are typically in the 60 to upper 70 dBA range at the residential locations nearest and most exposed to the station site. Noise from I-5 would not directly affect the project, except that it would obscure noise from the facility at the nearest residential locations, reducing the potential for noise impacts (KCSWD, 2006d). A detailed noise assessment prepared for this project is included as Appendix H.

2. What types and levels of noise would be created by or associated with the project on a short-term or long-term basis (i.e., traffic, construction, operation, other)? Indicate what hours noise would come from the site.

Short-Term Construction

During construction, noise would be generated by heavy equipment used for grading, excavating, paving, and erection of new facilities. Because project construction would occur only during daytime hours (i.e., between 7 a.m. and 10 p.m.) and is temporary, noise from construction is not anticipated to result in significant noise impacts.

Long-Term Operation

The upgraded station proposes to operate 24 hours per day, seven days per week. It currently operates 24 hours per day between 12:00 a.m. Monday through 7:00 a.m. Saturday and from 8:30 a.m. to 5:30 p.m. on Saturdays and Sundays.

Noise sources associated with the upgraded station would be similar to the sources at the existing facility. Primary noise sources would include heavy-duty equipment, trucks, and trailers. In the future, the majority of activities and equipment would occur inside of the facility, and the building structure would provide a substantial noise reduction for interior activities. Currently, there are no walls on the Transfer Building to act as noise barriers for much of the equipment and activities. The primary noise-producing equipment or activities are listed below:

- A top-pick or reach stacker for containers;
- Forklifts in outdoor recycling areas;
- Two compactors, with hydraulic power units installed in the building;
- Two rubber-tired front end loaders working in the building;
- Two yard tractors (i.e., yard goats) moving trailers in and out of the loading bays on the lower level; and
- Approximately 1,000 vehicles on an average day in 2030 and 2,100 vehicles on a peak day. Approximately 26 percent commercial vehicles (trucks), 71 percent self-haul vehicles (pickups and cars) and 3 percent business self-haulers (smaller trucks). By 2030, there are expected to be an average of 46 transfer trailer vehicles per day, with peak days of approximately 82 vehicles.

Noise from the expanded facility is not anticipated to result in noise impacts to the nearest residences. First, noise from the expanded facility was estimated to be 52 dBA or less during peak daytime operations and 50 dBA or less at night. These predicted levels would comply with the applicable daytime and nighttime noise limits at the residences nearest the site, on the hillside west of the facility across I-5. Second and more importantly, noise from vehicles traveling on I-5 dominates the noise environment at the residences on the hillside and traffic noise would be at least 10 dBA louder than noise from the facility, even during the quietest nighttime hours. Therefore, noise from the upgraded station would rarely, if ever, be audible at these hillside residences. No significant adverse noise impacts are anticipated from the project.

3. Proposed measures to reduce or control noise impacts, if any:

Construction activities would be restricted to daytime hours when traffic noise from I-5 is greatest.

During operation, many of the potential noise emitters at this site would be located inside enclosures or buildings, which would greatly reduce the noise received at the nearest residences from this equipment. These buildings and enclosures may also serve as noise barriers for other equipment operating outside. With the project as proposed, no significant adverse noise impacts were identified. Therefore no operational noise mitigation is proposed (KCSWD, 2006d).

8. Land and Shoreline Use

a. What is the current use of the site and adjacent properties?

The proposed project area encompasses two separate parcels located in unincorporated King County. An active solid waste transfer and recycling station owned and operated by KCSWD currently occupies the project area's southern parcel. The project area's northern parcel, currently owned by the WSDOT, is an undeveloped parcel consisting of existing fill, and a small storage lot that houses several jersey barriers located adjacent to I-5.

b. Has the site been used for agriculture? ☐ Yes ☒ No *If so, describe.*

The site has not previously been used for agriculture.

c. Describe any structures on the site.

The existing facility includes a 33,100-square-foot open-sided concrete and steel Transfer Building, a 500-square-foot employee facility located under the roof of the Transfer Building, a 180-square-foot scale building with two 50-foot-long pit-type vehicle scales, and two 40 CY free recycling drop boxes.

d. Will any structures be demolished? ☒ Yes ☐ No *If so, what?*

The existing 33,100-square-foot Transfer Building would be demolished during Phase 1 of the project. Other on-site structures that would be demolished would include the existing scale facility.

e. What is the current zoning classification of the site?

The current Bow Lake Transfer/Recycling Station parcel is zoned Tukwila Valley South (TVS) in the Tukwila Zoning Code (City of Tukwila, 1995b). The parcel to the north of the site is currently owned by the WSDOT; therefore, the site does not have a specified zoning classification.

f. What is the current Comprehensive Plan designation of the site?

The *City of Tukwila Comprehensive Plan* (City of Tukwila, 1995a) designation of the existing station site is TVS. Since the area of the project site owned by WSDOT does not specifically lie within a designated jurisdiction, the property does not have a Comprehensive Plan designation.

g. If applicable, what is the current shoreline master program designation of the site?

Not applicable.

h. Has any part of the site been classified as an "environmentally sensitive" area? ☒ Yes ☐ No *If so, specify.*

According to the King County iMap database (2006), the existing Bow Lake Transfer/Recycling Station is located within an erosion hazard area. The eastern portion of the WSDOT property is also designated as an erosion hazard area. See prior discussion in Section B(1) Earth.

i. Approximately how many people would reside or work in the completed project?

Staffing requirements of the new transfer facility are not expected to significantly change from current practices. KCSWD currently employs eight full-time attendants at the existing Bow Lake Transfer/Recycling Station. Following expansion of the facility, an estimated 13 attendants would be required to operate the station. It is assumed that janitorial services would be contracted out (KCSWD, 1993). No persons would reside on the site.

j. Proposed measures to avoid or reduce displacement impacts, if any:

The proposed project would not result in the displacement of any residential uses.

k. Proposed measures to ensure the proposal is compatible with existing and projected land uses and plans, if any:

As previously mentioned, the Bow Lake Transfer/Recycling Station is designated as TVS in the City of Tukwila's Zoning Code. Chapter 18.40 of the Tukwila Zoning Code allows transfer stations as Unclassified Uses (City of Tukwila, 2004b). The proposed expansion of the station to the north would transform this unimproved parcel to a solid waste facility. KCSWD is currently in discussions with WSDOT regarding the transfer of WSDOT property.

9. Housing

a. Approximately how many units would be provided, if any? Indicate whether high, middle or low-income housing.

The project does not provide any housing.

b. Approximately how many units, if any, would be eliminated? Indicate whether high, middle or low-income housing.

No residential units currently exist on-site; therefore, no units would be eliminated by the proposed project.

c. Proposed measures to reduce or control housing impacts, if any:

No housing impacts would result from the proposed project; therefore, mitigation measures are not proposed.

10. Aesthetics

a. What is the tallest height of any proposed structure or structures, not including antennas? What is the principal exterior building material or materials proposed?

The new Transfer Building would be the largest structure on the site, with a maximum height of approximately 65 to 70 feet above grade. The Transfer Building would consist of a two-level, cast-in-place concrete substructure and a pre-engineered, clear span metal superstructure. Precast tilt-up concrete panels would be used on the lower

exterior walls for a durable surface. The upper portions of the superstructure would be metal-clad with large translucent panel areas to provide natural lighting of the interior. The roof would consist of a highly reflective metal surface with daylighting panels at the peak to provide natural lighting for the waste handling areas below. A solar panel array would be constructed on the south side of the roof area. Green roofs would be installed above the Maintenance Building and the Overlook on the east and south sides of the Transfer Building, respectively.

b. What views in the immediate vicinity would be altered or obstructed?

As part of the design effort for the expanded Bow Lake Transfer/Recycling Station, a photo simulation was conducted in order to determine potential visual impacts of the project on adjacent properties (KPG, Inc., 2006). Photographs of the existing facility were taken from selected viewpoints on the west and east sides of I-5. See Photo numbers 1 through 7 in Figure 13. Using physical dimensions and elevations of proposed structures, simulation techniques were used to superimpose the new Transfer Building on the existing photographs to show how the new facility would appear from these viewpoints.

In Photo 1 in Figure 13, taken from the residential area west of I-5, the WSDOT property and jersey barriers in the foreground can be seen to the east across the freeway. In the simulated Photo 1a, the new Transfer Building to be constructed is shown on the WSDOT property, including the new green roof with skylights and the earth-toned walls and translucent panels (Figure 14). Most of the other portions of the expanded Bow Lake Transfer/Recycling Station will be obscured by on-site landscaping and/or topography. Views of the Cascade Mountains to the east will not be obstructed and most of the Duwamish – Green River Valley will remain visible from this viewpoint.

Photo 2 in Figure 13 was taken southwest of the existing Bow Lake Transfer/Recycling Station near a residential area on the west side of I-5. Views from this location would not be substantially affected by the new facility. As shown in simulated Photo 2a, only a small portion of the new Transfer Building is visible (Figure 15). Other views of the mountains and valley across the freeway to the northeast are unaffected.

Photo 3 in Figure 13 shows the entrance to the existing Bow Lake Transfer/Recycling Station near the scale facility. The appearance of the entrance is not expected to change in any material way, other than relocation of the scale facility north of its present location.

In Photo 4 in Figure 13, the view is to the east across the northbound I-5 entrance ramp toward the existing facility. Photo 4a in Figure 15 simulation shows no visual change of consequence. Note the existing cell tower in Photo 4a is located just off-camera south of Photo 4.

Views of the facility from the Green River valley floor are limited due to the dense, forested vegetation that is located along the slopes east of the site.



Existing Viewpoints



KING COUNTY
DEPARTMENT OF NATURAL RESOURCES & PARKS
SOLID WASTE DIVISION



BOW LAKE TRANSFER STATION

FACILITIES MASTER PLAN

FIGURE 13
JULY 2006



Simulation.

Photo Simulation (1A)

NOT TO SCALE



KING COUNTY
DEPARTMENT OF NATURAL RESOURCES & PARKS
SOLID WASTE DIVISION



BOW LAKE TRANSFER STATION

FACILITIES MASTER PLAN

FIGURE 14

JULY 2006



Simulation.



Simulation.

Photo Simulations (2A, 4A)

NOT TO SCALE



KING COUNTY
DEPARTMENT OF NATURAL RESOURCES & PARKS
SOLID WASTE DIVISION



BOW LAKE TRANSFER STATION

FACILITIES MASTER PLAN

FIGURE 15

JULY 2006

c. Proposed measures to reduce or control aesthetic impacts, if any:

A number of measures have been incorporated into the project design to reduce or control aesthetic impacts.

- Structural materials and colors have been selected to be compatible with the forested setting of the facility.
- Elevations and locations of structures have been designed to ensure that views of the Cascade Mountains and Mount Rainier to the east-southeast are not obstructed.
- The new site will be landscaped in a manner that enhances the natural characteristics of the site.
- As much as possible, existing trees will be maintained on the perimeter of the site and new trees and shrubs will be planted where perimeter areas are disturbed during construction.
- Closed, end-loaded containers will be used for solid waste, reducing the potential for spillage of waste and litter about the site.

11. Light and Glare

a. What type of light and glare will the proposal produce? What time of day would it mainly occur?

The proposed project is expected to produce minimal lighting impacts, similar to existing conditions. Because the facility operates 24 hours per day, interior and exterior lighting is required for hours of darkness throughout the year.

b. Could light or glare from the finished project be a safety hazard or interfere with views? ☐ Yes ☒ No *If yes, explain:*

The expanded Bow Lake Transfer/Recycling Station is not expected to generate light and glare that might provide a safety hazard or interfere with any views.

c. What existing off-site sources of light or glare may affect your proposal?

No off-site source of light or glare would affect the proposed project.

d. Proposed measures to reduce or control light and glare impacts, if any:

All lighting at the expanded Bow Lake Transfer/Recycling Station (interior and exterior) would be designed in accordance with local design standards. Exterior lighting would be installed to ensure minimal light spillover onto adjacent properties, especially to avoid impacts to I-5 traffic. Exterior colors and surfaces will be selected to reduce or eliminate glare.

12. Recreation

- a. What designated and informal recreational opportunities are in the immediate vicinity?**

A driving range is located approximately 650 feet east of the site, downslope of the transfer facility (Figure 2). The only other recreational opportunity within the project vicinity is Valley Ridge Park, an active use park (baseball/softball fields, tennis courts, etc.), located approximately 1,100 feet west of the site in the City of SeaTac.

- b. Would the proposed project displace any existing recreational uses?** ☐ Yes
☒ No *If so, describe.*

No existing recreational uses would be displaced by the project.

- c. Proposed measures to reduce or control impacts on recreation, including recreation opportunities to be provided by the project or applicant, if any:**

Although construction is not expected to result in a direct impact to recreational opportunities (e.g., temporary recreational facility closures, access restrictions, etc.), noise could be a concern for users of the nearby golf driving range. However, construction noise is not anticipated to result in an adverse effect to users of the golf driving range since the general area is susceptible to noise associated with I-5 traffic and industrial businesses east of the site. The contractor could implement additional BMPs during construction of the facility to attenuate noise impacts such as using temporary noise barriers if necessary.

13. Historic and Cultural Preservation

- a. Are there any places or objects listed on, or proposed for, the national, state or local preservation registers known to be on or next to the site?**

☐ Yes ☒ No *If so, generally describe.*

No places or objects listed on, or proposed for, the national, state or local preservation registers are known to be on or near the site.

- b. Generally describe any landmarks or evidence of historic, archaeological, scientific or cultural importance known to be on or next to the site.**

No landmarks or evidence of historic, archaeological, scientific or cultural importance are known to be on or next to the site (DAHP, 2005; and NPS 2005).

- c. Proposed measures to reduce or control impacts, if any:**

Should historic or cultural resources be discovered during construction, construction activities would immediately cease and a professional archaeologist would be consulted.

14. Transportation

- a. **Identify public streets and highways serving the site, and describe proposed access to the existing street system. Show on site plans, if any.**

Access to the Bow Lake Transfer/Recycling Station is provided by a number of surface transportation facilities. These include:

I-5. WSDOT classifies I-5 as an urban interstate highway. In the immediate vicinity of the Bow Lake Transfer/Recycling Station, it consists of four general-purpose lanes and a high occupancy vehicle (HOV) lane in both north and south directions. Lanes are typically 12 feet wide with 3- to 10-foot shoulders. Northbound and southbound lanes are separated by medians and concrete median barriers. The posted speed limit is 60 miles per hour (mph). An off-ramp and on-ramp for northbound traffic on I-5 are located just west of the entrance to the station connecting to South 188th Street. Traffic exiting I-5 on the off-ramp can turn left onto westbound South 188th Street or turn right onto eastbound South 188th Street and Orillia Road.

South 188th Street. Where the roadway passes under I-5, west of the entrance to the station, South 188th Street is a four-lane roadway with a center left-turn lane. In the immediate vicinity of the station, South 188th Street provides access to northbound I-5. There is a signal at the intersection of South 188th Street and the off-ramp from and on-ramp to northbound I-5.

Orillia Road South. Orillia Road South is located directly southwest of the entrance to the Bow Lake Transfer/Recycling Station. It connects South 188th Street and I-5 with the valley floor to the east (i.e., South 200th Street and South 212th Street). Orillia Road South is a four-lane roadway consisting of 11- and 12-foot lanes with a posted speed limit of 40 mph.

- b. **Is the site currently served by public transit?** ☐ Yes ☒ No *If not, what is the approximate distance to the nearest transit stop?*

The Bow Lake Transfer/Recycling Station is not currently served by public transit. A Park and Ride Lot is located approximately 0.75 mile west of the Bow Lake Transfer/Recycling Station on South 188th Street near 42nd Avenue South. This Park and Ride Lot connects Sea-Tac Airport and other areas in south King County with I-5 and other locations along the I-5 corridor via a number of Metro and Sound Transit bus routes. King County Metro operates Bus Route 155 along Southcenter Parkway north of the South 180th Street intersection (Figures 1 and 2).

- c. **How many parking spaces would the completed project have? How many would the project eliminate?**

The existing station has several tipping/loading and parking areas including:

- Two tipping stalls for commercial customers on weekdays;
- Nine tipping stalls for self-haul customers on weekdays (18 stalls on weekends);
- A Transfer Trailer Yard north of Transfer Building with a capacity for 16 trailers;
- Parking spaces for eight vehicles southwest of the Transfer Building;
- Unloading area for several vehicles at the free recycling area; and

- Unloading area for several vehicles at the paid recycling area.

The completed project would expand capacities of tipping/loading and parking areas as follows (Figure 16):

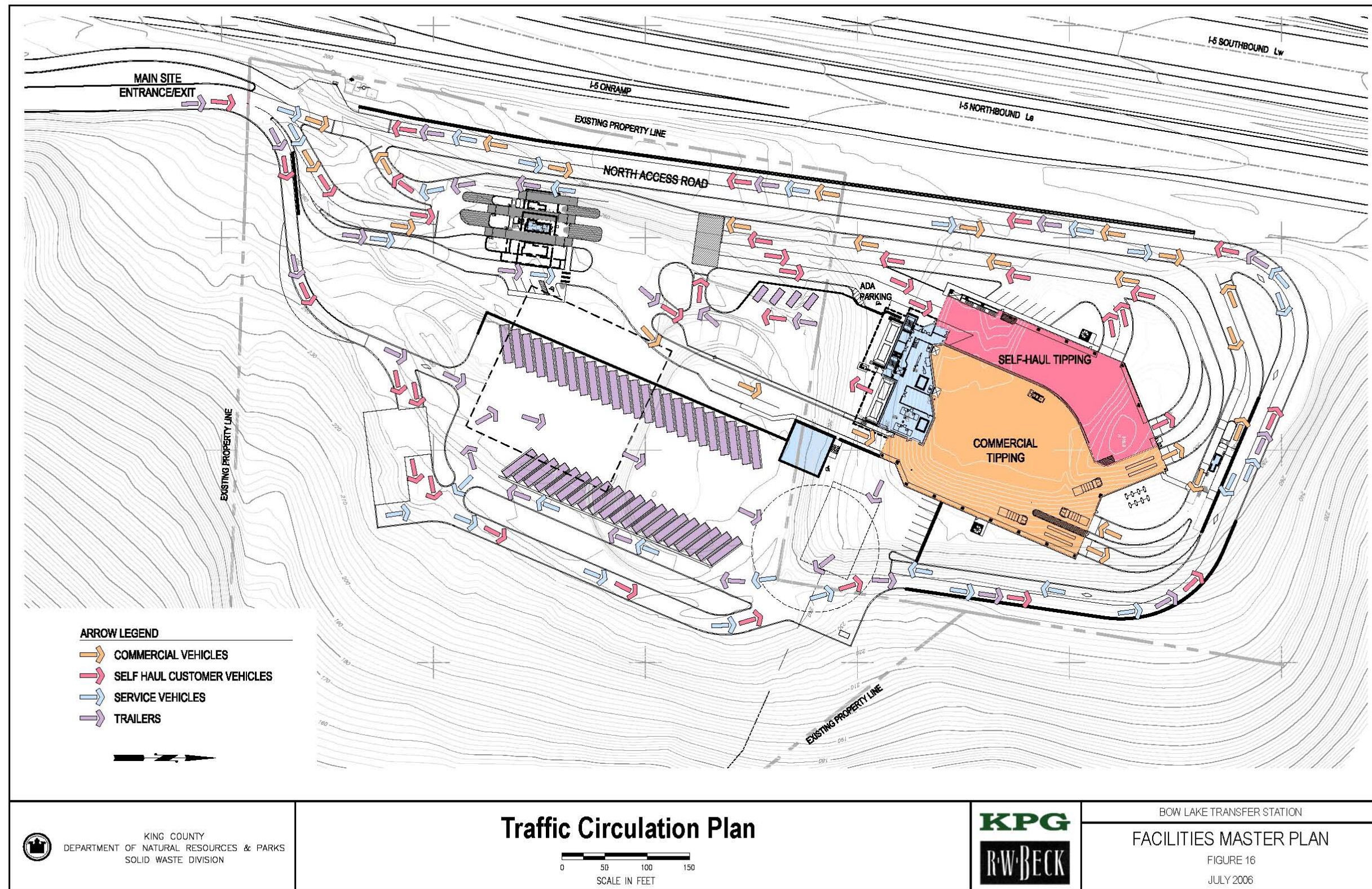
- Parking spaces for five vehicles at the South Scale Facility;
- A minimum of five tipping stalls for commercial customers;
- A minimum of 16 tipping stalls for self-haul customers;
- An expanded recycling and new yard waste tipping area (eight stalls);
- Parking stalls for 22 trailers (expandable to 44) at the Transfer Trailer Yard; and
- Parking spaces for 15 vehicles near the Transfer Building.

- d. **Will the proposal require any new roads or streets or improvements to existing roads or streets, not including driveways?** ☐ Yes ☒ No *If so, generally describe (indicate whether public or private).*

On-Site Circulation. Circulation on the new station site would be substantially changed as part of the expansion (Figures 3 and 6). The access to the station at the Orillia Road South/South 188th Street/I-5 intersection will remain the same. Customers would be directed to one of two scale facilities. Business/residential self-haul customers and oversize commercial vehicles would enter at the South Scale Facility and commercial customers would enter at the North Scale Facility. Self-haul customers would proceed from the South Scale Facility to the self-haul and commercial entrances of the Transfer Building or to the paid recycling and yard waste area on the south side of the Transfer Building. Self-haul customers would exit the west and north sides of the Transfer Building, returning to the South Scale Facility for reweighing and payment.

Commercial customers would follow the North Access Road to the North Scale Facility and then to the commercial tipping section in the Transfer Building. Commercial customers would exit the northeast corner of the building and return to the North Scale Facility for reweighing. Commercial customers would then exit the station via the North Access Road. Oversize commercial vehicles would access the commercial tipping section of the Transfer Building via the South Scale Facility. These vehicles would exit and return to the South Scale Facility for reweighing and payment. Typically, transfer trailer traffic would access the trailer parking/staging area from the south and exit via the North Access Road; however, it would be possible for transfer trailers to enter via the North Access Road. Employees would be able to enter the Transfer Building from either direction.

A number of features incorporated into the design of the new facility are intended to reduce the potential for vehicles to queue onto Orillia Road South and South 188th Street as they await weigh-in at the South Scale Facility. The new South Scale Facility will be located further north, providing 400 feet (approximately 18 vehicles) of pre-scale queuing length for incoming customers.



Circulation within the site has been designed to be more efficient and to reduce time spent on-site by customers. The maximum time spent on-site, excluding waste tipping, is expected to be 16 minutes and 60 minutes for commercial and self-haul customers, respectively. Maximum wait times at scales and for unloading are expected to be 5 minutes and 30 minutes for commercial and self-haul customers, respectively. These reductions in time spent on-site will also decrease the potential for vehicle queues extending onto off-site surface streets during periods of high use.

Off-Site Traffic Conditions. Increasing traffic problems at the Orillia Road South/South 188th Street/I-5 intersection have been recognized for the last several years. High traffic volumes (including truck traffic) and an inefficient roadway layout have resulted in serious congestion particularly during peak traffic hours. This congestion complicates access to the station at times because of the high traffic volumes and a short queue left-turn lane from eastbound South 188th Street.

Recently, KCSWD has been evaluating existing traffic conditions at transfer stations throughout the county in order to determine what improvements may be needed at these facilities. Nineteen measures of effectiveness were evaluated including travel time to site, time spent on-site, waste handling capacity, safety, compliance with noise regulations, and traffic impacts on local streets. In 2005, KCSWD conducted an analysis of Criteria 15 (KCSWD, 2005) (see Appendix I) which states:

“15. Meets Criteria for Acceptable Traffic Impacts on Local Streets

- a) Local intersections remain below capacity if additional traffic is added, as defined by the Highway Capacity Manual
- b) On average, traffic queues entering the transfer station do not spillover onto or impede local streets during 95 percent of the operating hours”

The Bow Lake Transfer/Recycling Station was one of five transfer stations evaluated.

For Criterion 15a, the weekday p.m. peak hour conditions were analyzed for local intersections using the Synchro/Sim Traffic software program. A traffic operational analysis (level-of-service [LOS] and volume-to-capacity [v/c] calculation) was performed for the following intersections:

- Orillia Road South/Transfer Station Main Site Entrance/Exit;
- South 188th Street/I-5 NB Ramp; and
- South 188th Street/Military Road.

For this analysis, if an intersection operates at LOS F or exceeds a v/c of 1.0, Criterion 15a is not achieved.

At the Bow Lake Transfer/Recycling Station, one intersection, Orillia Road South/Transfer Station Main Site Entrance/Exit, was identified that did not meet Criterion 15a. This intersection operated at LOS F with a v/c of 1.09. It was also determined that if there were no vehicles related to the station, the intersection would operate below capacity. By the year 2025, both the Orillia Road South/Transfer Station Main Site Entrance/Exit and the South 188th Street/I-5 NB Ramp intersections would not meet Criterion 15a with or without station traffic. Both intersections would be operating at LOS F with v/c levels exceeding 1.0.

Queue analysis was used to determine compliance of the existing facility with Criterion 15b. If the queue at the station entrance exceeds available storage capacity, the queue extends back onto the local street system, impeding local street operations. For this analysis, if the average queue exceeds the available storage capacity more than 5 percent of the operating hours, Criterion 15b is not met. In 2004, the Bow Lake Transfer/Recycling Station was found not to meet Criterion 15b on weekends. By year 2025, the station would not meet Criterion 15b on weekdays or weekends, with queues exceeding capacity between 26 and 64 percent of the time. The results of this analysis were used as part of the design of the expanded facility. See discussion of queuing for proposed facility under On-Site Circulation above.

Proposed Improvements. In order to explore potential improvements, KCSWD conducted a preliminary traffic assessment (KCSWD, 2004b). See Appendix G. This assessment examined existing and projected traffic conditions, developed potential alternatives, and prepared a preliminary cost estimate for a preferred alternative. This alternative involved a new single point intersection, a separate right-turn access from the northbound off-ramp to eastbound Orillia Road South, and the development of a flyover structure to intercept westbound Orillia Road South traffic destined for northbound I-5.

The assessment noted that though the improvements would likely significantly improve conditions in the area, these benefits would be realized by numerous entities and a large segment of the public unrelated to the station. An improvement project of this scale would be a regional benefit supported by the collaboration of state and local entities. Consequently, while King County may participate in future improvements, a potential improvement project for this intersection is not proposed as part of this expansion of the station.

- e. Will the project use (or occur in the immediate vicinity of) water, rail or air transportation?** ☐ Yes ☒ No *If so, generally describe.*

The project would not use or occur in the immediate vicinity of water, rail or air transportation.

- f. How many vehicular trips per day would be generated by the completed project? If known, indicate when peak volumes would occur.**

Operations. Table 2 shows Bow Lake Transfer/Recycling Station tonnage and traffic generation over the 2001 – 2005 period and the year 2030 forecast. Average and peak daily customer roundtrip traffic volumes in 2005, composed of both self-haul and commercial users, were 528 and 767 vehicles, respectively. These numbers are expected to increase to 1,047 and 2,104 vehicles, respectively, by the year 2030.

Table 2. Tonnage and Traffic Summary 2001-2005 and 2030 Forecast

Description	2001	2002	2003	2004	2005	2030
Average Daily Tonnage	354	414	374	628	792	1,384
Peak Hourly Tonnage	264	168	144	248	174	346
Peak Daily Tonnage	603	854	599	1,109	1,235	2,468
90th Percentile Peak Daily Tonnage	417	465	425	890	977	1,696
Total Annual Tonnage	129,303	150,974	136,347	229,883	288,936	505,000
Average Daily Customer Traffic	332	411	398	475	528	1,047
Peak Hourly Customer Traffic	104	121	108	120	108	295
Peak Daily Customer Traffic	797	822	794	781	767	2,104
90th Percentile Peak Daily Traffic	421	488	453	488	495	1,219
Total Annual Customer Traffic	121,014	150,115	145,273	173,861	193,251	382,000

Source: 2006 Facility Master Plan Update (KCSWD, 2006a).

In 2005, average truck traffic used for hauling compacted MSW to Cedar Hills Regional Landfill was approximately 44 trips per day, based on an 18-ton capacity for the average top-load container. By 2030, this number is expected to increase to approximately 46 trips per day, based on a 30-ton capacity for the intermodal container expected to be in use after the Cedar Hills Regional Landfill closes. These figures should be doubled to include empty haul trucks returning to the site.

The expansion of the station would include the capability to accept yard waste. By 2030, average and peak daily yard waste volumes are expected to be 15 and 25 tons, respectively. Based on an average capacity of 18 tons of yard waste for a top-load container, these volumes would generate 0.8 and 1.4 haul truck trips per day. Because of high seasonality, these figures can be expected to be significantly higher in spring and summer, and correspondingly lower in fall and winter.

Following expansion, an estimated 13 people would work at the station over a 24-hour period. These employees can be expected to generate approximately 30 to 40 vehicle trips per day to and from the site. An additional 10 trips per day would be generated by miscellaneous maintenance and delivery vehicles.

Construction. The duration of construction (Phases 1, 2, and 3) is expected to be between 29 and 36 months. Over this period, the average on-site work force is expected to be approximately 50 workers, although this number may vary considerably, depending on the nature of work underway at a particular point in time. This number includes construction workers as well as inspectors, county staff, consultants, vendors, etc. Based on the estimated 50 workers, there would be between 75 and 100 vehicle round trips each workday, assuming that many workers would leave the site once each day. Heavy truck traffic associated with construction activities is expected to range from 8,000 to 9,000 round trips.

g. Proposed measures to reduce or control transportation impacts, if any:

A number of measures have been proposed to reduce or eliminate potential transportation impacts, including:

- To the degree practical, site design has balanced cut and fill across the site to minimize the amount of materials hauled to off-site locations and materials imported to the site.
- Site circulation has been designed to separate self-haul and commercial customers, resulting in more efficient movement of vehicles about the site and shorter residence times for all users.
-
- Retaining walls would be installed on the west side of the North Access Road in order not to infringe upon WSDOT property in the vicinity of the northbound on-ramp to I-5. KCSWD has initiated discussions with WSDOT on this issue.
- The North Access Road and associated retaining walls would be designed to avoid any conflict with the existing cell phone tower.

15. Public Services

- a. **Would the project result in an increased need for public services (i.e., fire protection, police protection, health care, schools, other)?** ☐ Yes ☒ No *If so, generally describe.*

The project is not expected to result in the increased need for public services.

- b. **Proposed measures to reduce or control direct impacts on public services, if any:**

Impacts to public services are not anticipated; therefore, mitigation measures have not been developed.

16. Utilities

- a. **Check utilities currently available at the site:**

- ☒ Electricity
- ☐ Natural gas
- ☒ Water
- ☒ Refuse service
- ☒ Telephone
- ☐ Sanitary sewer
- ☐ Septic system
- ☐ Other: _____

- b. **Describe the utilities that are proposed for the project, the utility providing the service and the general construction activities on the site or in the immediate vicinity which might be needed.**

The expanded station would require new water, wastewater, stormwater, fire protection system, electrical, telephone, security and data systems that would all be connected as underground systems. Wastewater would be collected and trucked by tanker to a wastewater treatment plant. Stormwater systems would be extended to the municipal systems located on or near Southcenter Parkway at the bottom of the slope to the east of the site (KCSWD, 2006c). Stormwater issues were previously discussed in Section 3 Water.

Power

Currently, the station service power transformer and a standby engine generator with integral fuel tank are located between the two yard waste loading bays south of the Transfer Building. The new facility would require an upgraded generator that would be sized to handle the entire project site electrical needs with the exception of the two compactors. Energy production could also include the use of a photovoltaic generation system that would be considered part of the sustainable building features during design to help achieve KCSWD's goal of a LEED™ Silver Rating. The photovoltaic arrays would likely be mounted on the south-facing canopy over the Transfer Building (KCSWD, 2006a).

Emergency Water Service

A looped fire main system is provided around the site with fire hydrants situated at various locations. New on-site hydrants would be sited during the design phase of the project. Design of the Transfer Building would incorporate a dry pipe fire sprinkler system that would reduce the overall fire flow requirements for the site (KCSWD, 2006a).

C. Signature

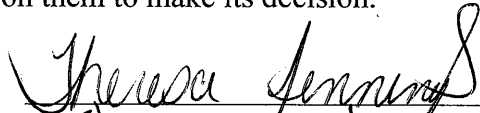
The above answers are true and complete to the best of my knowledge. I understand that the lead agency is relying on them to make its decision.

Signature:

Name (print):

Title:

Date Submitted:


Theresa Jennings
Solid Waste Director
August 25, 2006

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